

DISSERTATION

PREVENTION OF SUBSTANCE ABUSE IN JUVENILE DELINQUENTS:
IDENTIFICATION OF IMPORTANT MENTORING PROCESSES

Submitted by

Lindsey Michelle Weiler

Department of Human Development and Family Studies

In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

Spring 2013

Doctoral Committee:

Advisor: Toni Zimmerman
Co-Advisor: Shelley Haddock

Jennifer Krafchick
Lise Youngblade
Kimberly Henry

Copyright by Lindsey Michelle Weiler 2013

All Rights Reserved

ABSTRACT

PREVENTION OF SUBSTANCE ABUSE IN JUVENILE DELINQUENTS: IDENTIFICATION OF IMPORTANT MENTORING PROCESSES

Although effective youth mentoring is associated with desirable changes in vulnerable youth, little is known about its effectiveness in reducing risk for drug and alcohol abuse in juvenile delinquents. The purpose of the current study was to investigate the effectiveness of Campus Corps: Therapeutic Mentoring for At-Risk Youth as a substance abuse prevention program and to examine the mechanisms by which mentoring affects positive outcomes. Results revealed that after participating in Campus Corps, youth ($n=298$, ages 11-18) decreased the frequency of their substance use, as compared to a comparison group ($n=135$, ages 11-18). Findings also indicated increased autonomy from marijuana use, more appropriate attitudes toward substance use, and decreased frequency of problem behavior and truancy. Treatment benefits, however, were not observed for academic self-efficacy, grade point average, peer refusal skills, autonomy from alcohol use, or perceptions of problem behavior. Additionally, results indicated support for a structural model of mentoring that highlights the importance of program support, mentor efficacy, youth's existing relationships, perception of compatibility, youth support-seeking behavior, mentor-mentee relationship quality, and mentoring focus of activities in affecting change in youth's substance use, delinquency, and academics. Results from this study contribute to the knowledge base about important mentoring processes for juvenile delinquents at risk of substance abuse, which has important implications for mentoring participants, future substance abuse prevention research, program planning, and program implementation.

ACKNOWLEDGMENTS

It is impossible to capture how deeply grateful I am for the support and guidance of those who stood beside me on the journey of completing my doctoral dissertation. To them I owe a tremendous debt. First, I want to express my unwavering appreciation for my advisor, Dr. Toni Zimmerman – who exemplifies the substance of an unforgettable mentor; she continually and consistently kept me grounded, optimistic, and inspired.

Second, my journey would not have been the same without my co-advisor, Dr. Shelley Haddock – who never ceased to reassure me that I was capable of accomplishing this project and so much more. Her guidance and candid advice have undoubtedly prepared me for my next adventure. My third debt of gratitude goes to Dr. Jen Krafchick, a true representation of kindness; her steady spirit provided me strength and endurance to complete this journey.

I also want to thank Dr. Lise Youngblade – who served as a remarkable role model and expression of brilliance – and Dr. Kim Henry – whose tremendous expertise continually inspired me to seek further understanding. Each of these women conveyed a courageous respect for scholarship. Through their examples, I could imagine what I might accomplish too.

Lastly, this feat would certainly not have been possible without my family and friends. Thank you to my parents - whose enviable example of unconditional love, benevolence and compassion inspired me to pursue this journey of offering people the potential for hope, healing, and happiness. To my generous siblings and friends – who provided respite and perspective. Most importantly, I certainly would not have been able to accomplish this without my husband, Nick – for whom I have no way to possibly articulate everything you mean to me. I love you.

~ In His Glory, Through His Grace ~

TABLE OF CONTENTS

ABSTRACT.....	ii
ACKNOWLEDGMENTS	iii
LIST OF TABLES	vi
LIST OF FIGURES	vii
CHAPTER ONE	1
<i>Introduction</i>	1
CHAPTER TWO	4
<i>Literature Review</i>	4
Theoretical Model of Youth Mentoring.....	4
Mentoring Relationship.	5
Social and Emotional Development.....	6
Cognitive Development.	7
Identity Development.....	9
Final Model Components.....	10
Limitations to Rhodes' Model.	12
Empirical Mentoring Literature	13
Mentoring Effectiveness.	13
Mentoring for Substance Abuse Prevention.	17
Summary of Effective Mentoring Strategies.	19
The Current Study	21
Campus Corps: Therapeutic Mentoring for At-Risk Youth.	21
Hypotheses.....	24

CHAPTER THREE	26
<i>Method</i>	26
Participants.....	26
Procedure	28
Measures	29
Mentor-Mentee Relationship Quality, Activity Focus, Programmatic Support, Youth Support-Seeking Behavior, and Mentor Perception of Compatibility.....	29
Mentor Self-Efficacy.	29
Youth’s Existing Relationships.....	30
Resilience.....	30
Substance Abuse.	30
Delinquency.	31
Academic Achievement.	31
CHAPTER FOUR.....	32
<i>Results</i>	32
Assessing Treatment Effects.....	35
Evaluating the Conceptual Model.....	38
CHAPTER FIVE	46
<i>Discussion</i>	46
Limitations	49
Future Research	50
Implications.....	51
Conclusion	52
REFERENCES	53

LIST OF TABLES

Table 1: Demographic Characteristics of the Treatment and Comparison Groups	27
Table 2: Pre-Intervention Means for Key Variables by Condition	33
Table 3: Correlation Coefficients for Key Variables	34
Table 4: Post-Intervention Adjusted Means for Key Variables by Condition.....	37

LIST OF FIGURES

Figure 1. Conceptual Model of Mentoring	25
Figure 2. Hypothesized model.	40
Figure 3. Structural equation model of mentoring (substance use)	43
Figure 4. Structural equation model of mentoring (delinquency).....	45

CHAPTER ONE

Introduction

An established relationship exists between substance abuse and delinquency risk factors (Dembo, Wareham, Poythress, Cook, & Schmeidler, 2006; Fergusson, Lynskey, & Horwood, 1996). As many as 80% of youth in trouble with the law are using alcohol and other drugs (Center on Addiction and Substance Abuse, 2004), and substance use disorders are among the most commonly diagnosed disorders within the juvenile justice system (Palermo, 2009). Juvenile delinquents (i.e., youth who have been formally charged with a crime, as well as youth who have exhibited behaviors that could be judged under the law, but were not) appear to be at increased risk of substance abuse due to challenges such as academic failure and deviant peer relationships (Mason, Hitchings, McMahon, & Spoth, 2007), as well as early aggressive behavior, instability, and poverty (Dodgen & Shea, 2000). Additionally, juvenile delinquents at risk of substance abuse also may experience poor impulse control, co-occurring mental health disorders, social skills deficits, and problems within their family (Hawkins, Catalano, & Miller, 1992; Weinberg, 2001). Conversely, juvenile delinquents who experience individual protective factors, such as school connectedness and success, positive future orientation, sense of self, emotional and behavioral control, strong bonds to prosocial peers, and social competence are more likely to abstain from drugs and alcohol (Burrow-Sanchez, 2006; Haegerich & Tolan, 2008; Hawkins, Kosterman, Catalano, Hill, & Abbott, 2005).

Due to the presence of such factors, the field of substance abuse prevention has progressed towards a risk and protective factor framework for explaining the onset and development of substance abuse disorders in youth (Corrigan, Loney, Videka, & Brown, 2007).

Because juvenile delinquents typically experience a number of influential personal and environmental factors, it is necessary to identify strategies that decrease risk factors, while also increasing protective ones. Additionally, Haegerich and Tolan (2008) highlighted the importance of focusing on the developmental-ecological context of adolescent substance use in order to advance prevention efforts, which aligns with the risk and protective factor paradigm. That is, focusing on individual, peer, family, and community factors over the course of development may be beneficial for preventing serious substance use. Lastly, juvenile delinquents may benefit from a comprehensive program grounded in a developmental-ecological framework which includes a strong bond to a competent and caring adult (Masten & Reed, 2002).

Youth mentoring has become an increasingly popular intervention for vulnerable youth, and a recent analysis of mentoring program effectiveness found support for the effectiveness of mentoring for improving outcomes across behavioral, social, emotional, and academic domains of development (DuBois, Portillo, Rhodes, Silverthorn, & Valentine, 2011). Mentoring has been associated with deterring risky behavior and promoting pro-social behavior (Eby, Allen, Evans, Ng, & DuBois, 2008). Eby and colleagues also indicated a range of developmental benefits including a) higher self-esteem, b) greater engagement and performance in school, c) reduced delinquency and substance abuse, and d) improved mental health. Mentored youth also have shown increased positive connections to school, peers, and family, and less likelihood of depression (King, Vidourek, Davis, & McClellan, 2002). Mentoring programs in the juvenile justice system tend to focus on the development of protective factors that are salient to youth at risk of substance abuse, including emotional and behavioral control, academic achievement, positive adult relationships, confidence in one's ability to resist substances, and beliefs that substance use is harmful (Haegerich & Tolan, 2008). When implemented successfully, evidence

suggests that mentoring programs can influence positive youth development among at risk youth (DuBois et al., 2011).

Although mentoring programs have been shown to be effective in promoting positive outcomes for youth, few studies have addressed substance abuse prevention specifically with juvenile delinquents. In addition, not all mentoring programs are effective (DuBois, Holloway, Valentine, & Cooper, 2002) and continued evaluation of these programs is needed. Recently, mentoring scholars have called for more research aimed at evaluating conceptual models that seek to better understand important mechanisms so that programs may increase their effect on youth (Rhodes, Spencer, Keller, Liang, & Noam, 2006). Extant research is unclear on the processes by which some youth are successful in programs while others are not. Examination of the conditions under which mentoring works is prerequisite to increasing the efficacy of mentoring-based initiatives.

In partnership with Campus Corps: Therapeutic Mentoring for At-Risk Youth (Campus Corps) at Colorado State University, the current study evaluated mentoring as a means to reducing risk for substance abuse in juvenile delinquents (ages 11 to 18) to further understand how, and under what conditions, mentoring works. The purpose of the current study was to test whether involvement in Campus Corps reduced substance abuse and delinquency, and increased academic achievement. Second, a new conceptual model of mentoring was evaluated to identify the mediating mechanisms by which mentoring affects positive development among at-risk youth (i.e., decrease in substance abuse and delinquency, and increase in academic achievement).

CHAPTER TWO

Literature Review

To further understand the theoretical and empirical literature on youth mentoring, a review of seminal and relevant research is presented. First, a theoretical model of youth mentoring is described, drawing from the work of Jean Rhodes (2002, 2005). Second, a review of mentoring effectiveness, including what is known about best practices is presented. Third, relevant examples of mentoring for substance abuse prevention are highlighted. Throughout the literature review, important gaps are emphasized to provide support for the research questions explored in this study. Finally, the current study's hypotheses are presented along with a description of the Campus Corps program.

Theoretical Model of Youth Mentoring

To date, one prominent theory of mentoring has been proposed – Rhodes' (2002, 2005) developmental model of mentoring relationships. Rhodes' model represents a critical step in the effort to delineate the conditions by which mentoring is effective and offers much to the field of mentoring. The model assumes a broad definition of mentoring involving a caring and supportive relationship between a youth and a nonparental adult. In 2006, Rhodes and colleagues expanded the model and in 2011, Dubois and colleagues utilized the model as a framework for their meta-analysis of youth mentoring effectiveness. The model assumes that the positive effects of mentoring are derived from the mentoring relationship itself and therefore, focuses on how the processes of the relationship affect youth. Specifically, Rhodes (2002, 2005) proposes that mentoring affects youth by enhancing youth's social relationships and emotional well-being, by

improving their cognitive skills through instruction and conversation, and by promoting positive identity development through serving as role models and advocates.

Mentoring relationship. The first critical component to Rhodes' model is the mentoring relationship. The mentoring relationship is characterized by mutuality, trust, and empathy. Without a strong and meaningful bond between the mentee and mentor, little benefits will be derived from the mentoring experience. Findings of existing literature support the assumption that a strong emotional connection is a distinguishing feature of those mentoring relationships that are associated with better outcomes for youth (DuBois & Neville, 1997; Grossman & Rhodes, 2002; LoSciuto, Rajala, Townsend, & Taylor, 1996; Sipe, 2002). DuBois, Neville, Parra, and Pugh-Lilly (2002) explored a process-oriented model of mentoring and also found that the quality of the relationship was significant beyond frequency of contact and mentor demographics.

Although there is considerable evidence that the quality of the mentoring relationships is important, others have posited that a close connection may in fact be a secondary gain from engagement in activities (Hamilton & Hamilton, 2010). Whether youth come to trust and appreciate their mentor through the relationship first or if it is a by-product of successfully participating in goal-oriented activities (Rhodes & Spencer, 2010), the quality of the relationship is certainly important. As discussed below, the mentoring relationship varies considerably across setting and context. Nevertheless, high-quality mentoring programs pay considerable attention to facilitating and maintaining this active ingredient. The mentoring relationship, when meaningful and positive, provides opportunity for change in three developmental domains: 1) social and emotional development; 2) cognitive development; and 3) identity development (Rhodes, 2002, 2005).

Social and emotional development. First, mentoring may assist in the mentee's social and emotional development by providing youth with a) opportunities for fun and escape from daily stresses, b) corrective emotional experiences that may generalize to and improve youths' other social relationships, and c) assistance with emotion regulation (Rhodes, 2002, 2005). Providing mentees with fun and enjoyable experiences may be particularly important for juvenile delinquents due to the predictive nature of boredom on offending (Putnins, 2010). When youth have opportunities to engage in prosocial activities with a caring adult, there is less risk of boredom. More importantly, youth learn to spend their time in positive activities. Furthermore, engaging in recreational activities may provide respite for youth who are frequently navigating difficult circumstances (Rhodes et al., 2006).

Next, mentoring may provide opportunities for social and emotional growth through corrective emotional experiences. Rhodes and colleagues (2006) suggested that through these experiences, youth may learn to generalize to and improve youths' other social relationships (e.g., with parents or teachers). For youth who have experienced difficult, unsatisfactory, or abusive relationships with parents or other caregivers, a corrective experience with a caring adult may provide an opportunity for a positive attachment (Hayes, Castonguay, & Goldfried, 1996). Rhodes posits that mentors are able to provide this experience through caring for and providing support for their mentee.

The expectation that positive mentoring relationships can modify youth's perceptions is based on attachment theory (Bowlby, 1988). Attachment theory postulates that children construct cognitive representations of relationships through their early experiences with their primary caregiver(s) and that these representations will influence how children experience relationships in the future. However, there is evidence to suggest that these representations are open to

modification in response to changing life circumstances, such as engagement in new patterns of interaction with a caring adult (Belsky & Cassidy, 1994). A supportive relationship with a mentor, for example, might provide youth with a secondary attachment figure, providing a secure base from which youth can achieve important competencies. Mentors who are consistent in their relationships with youth may help them feel worthy of care and promote a healthy working model of attachment. Rhodes and colleagues (2006) suggested that adolescence may be an ideal developmental period for these experiences due to the increases in perspective taking ability and autonomy and decreases in parental control.

The final way in which mentoring affects social and emotional development is through assistance with emotional regulation. In cases where youth are involved in healthy adult relationships, mentoring relationships may influence communication skills and regulation of difficult emotions. Role modeling appropriate regulation of emotions provides a learning opportunity for youth. Additionally, youth engage in communication regarding emotions regularly with their mentor, which allows for the mentor giving direct feedback as part of the relationship. Development of emotion regulation and communication skills may ease difficult everyday interactions between parents and youth, or teachers and youth (Rhodes, 2005). This component of Rhodes' model has been supported: Mentoring relationships have been linked to improvements in youths' relationships with parents, teachers, and peers (DuBois et al., 2002; Rhodes, Reddy, Roffman, & Grossman, 2005).

Cognitive development. The mentoring relationship also may affect the cognitive development of youth. Rhodes' model (Rhodes, et al., 2006) highlights the social nature of learning including a) exposure to new opportunities, b) provision of intellectual challenge and guidance, and c) promotion of academic success. First, mentoring may affect cognitive

development through the experiences and activities that the mentee and mentor are engaging in. For example, participating in a cooking class, learning how to play soccer, or engaging in a sensitive discussion about teen suicide may provide new opportunities to learn, think, or act differently. Exposure to new opportunities provides an environment for positive growth. Through these experiences, youth are exposed to new experiences and may even engage in teaching the mentor a skill or two, which fosters the development of knowledge and skills.

Second, the development of cognition is also possible through the provision of intellectual challenge and guidance. It also has been suggested that one mechanism through which benefits emerge is meaningful youth-relevant conversations between mentor and mentee (DuBois et al., 2002). During such conversations, mentors provide a safe context for sharing sensitive issues while also providing guidance without judgment. Additionally, because the mentor is not a parental figure, they may be able to more easily provide challenge to and guidance for important decisions. Vygotsky (1978) described a “zone of proximal development” that describes the range between what a youth can attain when problem solving independently and what he or she can accomplish when working under adult guidance. During this time, cognitive and intellectual growth transpires through interactions with caring adults. For example, a relationship with a mentor may provide the necessary scaffolding for adolescents to adopt and refine new ways of thinking. This may be facilitated through collaborative learning, where adolescents are more receptive to adult values, advice and perspectives (Vygotsky, 1978).

Last, cognitive growth may occur through the mentor’s promotion of academic success. Specifically, Rhodes’ model posits that emotional support of a mentor, including positive feedback may help to encourage youth to try harder in school. Studies have revealed improvement in academic outcomes for youth in the context of close and enduring bonds with

assigned mentors (Barron-McKeagney, Woody, & D'Souza, 2003; Britner & Krammer-Rickaby, 2009). As discussed in the 2011 meta-analysis by Dubois and colleagues, mentoring programs that not only include one-on-one mentoring, but also group mentoring components may offer unique opportunities for engagement with peer and multiple mentors for instruction and guidance on academic issues. Mentors may promote positive attitudes toward school, encourage effort in school, and even assist with school homework. School-based mentoring programs are designed for promoting academic success, but many mentoring programs recognize the importance of school and may even set specific academic goals with all mentees.

Identity development. The final domain the mentoring relationship also may affect is identity development. Identity serves important functions during adolescence and mentoring may assist youth in how they think about themselves now and in the future. First, Rhodes' model assumes that as youth identify with their mentor, they begin to view him or her as a role model. Through the development of this relationship, youth may internalize changes by promoting positive shifts in their sense of identity and social roles (Rhodes, 2005). To better understand this process, Rhodes' model draws from the idea of "reflected appraisal" from Mead (1934). That is, individuals imagine how they are perceived by significant people in their life and incorporate that perception into their own view of their selves. Therefore, there is potential for change in the youths' negative view of self, if present, through the mentor. The mentor's positive appraisal of the youth may become incorporated into the youth's sense of self, thus modifying how the youth perceives others' view of him or her. In turn, Rhodes' suggests this also may alter how the youth thinks peers and parents view him or her. Through this process of reflected appraisals, mentors may be helpful in shifting adolescents' conceptions of their current and future identities.

Next, identity development is occurring in the youth's perception of his or her future identity. Specifically, the model refers to the concept of "possible selves," which is individuals' ideas of what they might become, what they would like to become, and what they fear becoming (Markus & Nurius, 1986). These possibilities emerge as youth begin to compare themselves with the adults they know. Adolescents from disadvantaged situations may have limited contact with positive role models and may have a hopeless view of their opportunities for future success (Leventhal & Brooks-Gunn, 2011). Thus, involvement in a supportive relationship may promote a new vision of who they hope to be. As youth identify with their mentor, their early internalizations may begin to change, causing shifts in their sense of identity. For example, mentors may expose youth to his or her potential for college and visiting the university may assist youth in internalizing this possibility for their future.

Final model components. Rhodes' model of mentoring offers a solid foundation for envisioning the changes that occur for youth in the mentoring relationship, suggesting that changes in three domains (socio-emotional, cognitive, and identity) will lead to positive outcomes (e.g., school achievement, emotional well-being). Additionally, Rhodes highlights the importance of other relationships as a mediator. Rhodes (2002, 2005) proposed that relationships with guardians, peers and teachers may mediate the relationship between social and emotional development and positive outcomes. For instance, as illustrated above, changes in communication skills through mentoring may lead to more positive relationships with teachers, which may in turn, lead to improved academic performance.

Furthermore, Rhodes suggests that the youth's interpersonal history (e.g., attachment with parental figure), social competencies (e.g., social skills), and developmental stage will moderate the effect of mentoring on youth outcomes. First, a youth's experience with earlier

adult relationships may affect his or her ability to trust and rely on the mentor (Britner, Balcazar, Blechman, Blinn-Pike, & Larose, 2006). Zand and colleagues (2009) found that youth with better preexisting adult relationships formed higher-quality mentor relationships. However, as described above, this relationship may be especially corrective for youth with inconsistent attachment figures. Next, the youth's social competency may contribute to his or her ability to form a relationship and engage in activities with the mentor (Spencer, 2007). Additionally, the willingness and capacity of a youth to form a relationship may depend on their developmental stage. For example, youth needs may vary upon developmental stage; whereas younger adolescents may need and accept more guidance from mentors compared to older adolescents (Larson, 2006). At the same time, older adolescents may come with increased motivation and practical need to achieve a goal (e.g., graduate from high school).

Beyond characteristics of the individual, Rhodes' model suggests that the duration of the relationship is important, as well as the program characteristics and family and community context. Specifically, some research points to the importance of long-term relationships (i.e., 12 months or more) (Rhodes, Reddy, & Grossman, 2005). However, other research suggests that consistent, short-term mentor programs also can be effective if the mentors fulfilled the agreed upon time commitment (Larose, Tarabulsky, & Cyrenne, 2005). Regardless, the duration of the relationship appears to be an important component to mentoring effects, whether it is length, frequency, or consistency. Next, Rhodes highlights the importance of considering the program structure. Components of best practice mentoring will be discussed in detail below. Finally, Rhodes suggests that the family and community context play an important role. Several factors have been supported in previous research as important indicators of mentoring success including low socioeconomic status (DuBois et al., 2002) and exposure to violence in one's community

(Hirsch, 2005). However, more research is needed to decipher the complexity of poverty's role in mentoring effectiveness.

Limitations to Rhodes' model. Although Rhodes' model represents an important step in understanding the mentoring process, more research is needed. Specifically, Rhodes' model lacks the specificity needed for investigating the effectiveness of mentoring. Due to the complex nature of relationships, a more refined model is in order. Additionally, Rhodes' model includes specificity regarding the mentor relationship, yet lacks detail on the influence of the mediators and moderators listed above. These factors seem more like an afterthought than an integral part of the model. Of particular importance would be the influence of the mentor's characteristics, experiences, beliefs, and abilities, as well as program characteristics. Research has highlighted that effective mentors are more likely to take responsibility for sustaining the relationship, respect youth's viewpoint, pay attention to youth's need for fun, and utilize help from support staff (Sipe, 2002). Additionally, mentors who are more confident tend to have greater success, especially in conjunction with the degree to which a mentee seeks support (Parra, DuBois, Neville, Pugh-Lilly, & Pavinelli, 2002). However, Rhodes' model does not include a specific pathway for the influence of mentor characteristics.

Furthermore, Rhodes mentions program characteristics as a moderator in the model, but existing literature supports program characteristics (e.g., supportive staff, scheduled activities) as a critical component in the process of mentoring. For example, programs that include high-quality training and ongoing support promote high feelings of self-efficacy in the mentor's ability to maintain a successful relationship, which is important to building a high-quality mentoring relationship (Karcher, Kuperminc, Portwood, Sipe, & Taylor, 2006). Additionally, because program characteristics are not a central part of the model, potential implications for

effective practice can only be inferred. As described in Dubois et al. (2011), theoretical frameworks of mentoring should more explicitly articulate links between processes occurring at the level of the mentor relationship and those operating at the level of programs. Finally, Rhodes' model fails to delineate specific links between specific processes and different types of participant outcomes, and how those may depend on the characteristics of both the youth and the mentor. Therefore, the current study sought to fill in some of the theoretical gaps in the extant literature, while utilizing the important foundation set by Rhodes and colleagues.

Empirical Mentoring Literature

Beyond the theoretical framework of Rhodes' developmental model of mentoring, there is considerable empirical support for youth mentoring. To gain a focused understanding of youth mentoring for the purpose of substance abuse prevention in juvenile delinquents, general youth mentoring program effectiveness will be discussed, followed by a specific discussion on the effect mentoring has on substance abuse prevention. The empirical literature review will conclude with a summary of mentoring effective mentoring strategies and existing gaps.

Mentoring effectiveness. For purposes of this study, mentoring will be defined as a supportive relationship in which one person offers support, guidance and concrete assistance to the partner, based on the sharing of experience and expertise without expectation of personal gain by the mentor (Center for Substance Abuse Prevention, 2000). As described briefly in the introduction, when implemented successfully, evidence exists that mentoring programs can influence behavioral, attitudinal, relational, and motivational changes in youth (Dubois et al., 2011; Rhodes, 2008).

Mentoring programs vary in their goals and structure. Although most programs are focused on promoting positive youth outcomes, there is considerable diversity in the way in which these outcomes are sought after. For example, some programs have broad developmental goals (e.g., social competence), while others have more narrow ones (e.g., improved school performance) (Jekielek, Moore, & Hair, 2002). Nevertheless, empirical evidence is consistent with Rhodes' (2002, 2005) developmental model, indicating that positive youth outcomes are more likely to occur when there is a high-quality mentor relationship, based on respect, trust, compatibility, and closeness (DuBois et al., 2002). Furthermore, mentee characteristics (e.g., support seeking behavior), mentor characteristics (e.g., confidence), and program structure (e.g., type of activities), are important in determining the quality of the mentor relationship (DuBois et al., 2011). The studies described below were selected because of their focus on evaluating mentoring effectiveness with at-risk youth populations and/or juvenile delinquents due to the target population of this study. Additionally, special attention was given to research focused on evaluating the process of mentoring.

First, a recent, comprehensive meta-analysis was conducted on youth mentoring programs (DuBois et al., 2011). The review is especially pertinent because it utilized Rhodes' model of mentoring as a framework for evaluating effectiveness. The meta-analysis included 73 independent evaluations of mentoring programs directed toward children and adolescents published over the past decade (1999-2010). DuBois and colleagues (2011) found support for the effectiveness of mentoring for improving outcomes across multiple domains of development. In addition, because results revealed that nonmentored youth commonly exhibited declines, while mentored youth exhibits gains, mentoring may have the ability to serve as a prevention measure, as well as an intervention effort. Of particular importance is the finding that mentoring may

simultaneously improve multiple outcomes for youth. Additionally, programs that utilized group formats show comparable levels of effectiveness. Thus, mentoring appears to be a flexible format for prevention.

However, the meta-analysis also revealed some important areas for improvement. The first concern is a lack of attention on several important outcomes, including juvenile offending (DuBois et al., 2011). Additionally, most programs failed to evaluate the long-term benefits of mentoring, and if a long-term evaluation was included, only modest gains were noted. Nevertheless, Dubois and colleagues (2011) revealed that programs are more effective when a) youth participants have pre-existing difficulties (e.g., problem behavior) or have been exposed to significant risk; b) there has been a good fit between the educational or occupational backgrounds of mentors and the goals of the program; c) mentors and youth have been paired based on similarity of interests; and d) programs have been structured to support mentors in assuming teaching or advocacy roles with youth. Finally, Dubois and colleagues (2011) challenged the field to investigate the impact of mentoring on neglected outcomes (especially those with policy interests) and to utilize and test well-specified models of mentoring effectiveness.

Dubois and colleagues also completed a meta-analysis in 2002, reviewing mentoring effectiveness in programs through 1998. Results from 55 evaluations indicated that mentoring has significant effects, albeit small, on problem behavior, academic outcomes, and career outcomes. Results indicated an average effect size was 0.14, indicating incongruence between research and the seemingly widespread acceptance of mentoring initiatives at that time (DuBois et al., 2002). This important analysis of youth mentoring programs serves as a reminder about the necessity of continuing to evaluate these programs regularly and to not assume all mentoring

results in positive outcomes. Interestingly, the level of impact found in the 2011 meta-analysis was similar to the 2002 evaluation. Although, it is within the range of effects observed for other types of interventions for youth, it fails to reflect any noticeable improvement since the previous generation of mentoring programs (DuBois et al., 2011).

In addition to the Dubois and colleagues' reviews, Jekielek et al. (2002) completed a review of 10 mentoring programs for youth. Results from their review indicated that positive outcomes are possible. Overall, youth participating in mentoring relationships were found to have improvements on educational measures and their ability to develop healthy and safe behaviors. Of particular importance, Jekielek et al. (2002) found that youth who perceive their mentoring relationship as a high-quality experience have better results. Although mentee perceptions of relationship quality appear important, few studies have evaluated their perceptions as an important component of mentoring effectiveness.

Beyond meta-analyses, several studies have been conducted on the Big Brothers Big Sisters programs (BB/BS). Public/Private Ventures (P/PV) conducted an 18-month experimental study of eight BB/BS programs across the nation. P/PV evaluated whether one-on-one mentoring with at-risk youth made a substantial difference in youths' lives (Tierney & Baldwin-Grossman, 1995). Half of the 959 youth (ages 10-16) were randomly assigned to a treatment group (i.e., mentoring), while half were assigned to a control group and placed on a waiting list. The findings revealed that 46% of mentored youth were less likely to use drugs or alcohol than were youth that did not receive mentoring. In addition, 52% of the youth were less likely to skip school, and most had improved relationships with their parents due to increased trust between the parent and child (Tierney & Baldwin-Grossman). Findings also indicated that mentored youth were less likely to be physically aggressive. P/PV reported that the success of BB/BS's programs

were due to having a high level of contact between mentors and mentees, meaning at least three monthly meetings lasting up to 4 hours each, as well as introducing the mentor as a friend rather than as a teacher or authority. Beyond, the P/PV evaluation, Thompson and Kelly-Vance (2001) found that at-risk males who participated in BB/BS's program demonstrated significantly higher academic gains than the control group, even after controlling for ability.

Mentoring for substance abuse prevention. Beyond the evidence for mentoring with at-risk youth generally, two influential studies have evaluated the effectiveness of mentoring on the prevention of substance abuse specifically. Although the samples of mentees and mentors are different than the current study, these studies provide evidence for the potential effects of mentoring on substance abuse prevention with juvenile delinquents and the need for further investigation.

First, an intergenerational mentoring program to prevent drug and alcohol use, Across Ages, was evaluated for over a 3-year period for 400 youth ages 9-13. The program consists of three elements: 1) a mentoring program in which youths are matched with older adults (over age 55) who provide ongoing support and encouragement in weekly interactions; 2) community service activities designed to promote involvement with and better understanding of the frail elderly; and 3) a school-based life skills curriculum. Students' classes were randomly assigned to one of three experimental conditions: the mentor condition, the curriculum condition, and the control condition. Results indicate that youth in the mentoring group demonstrated increased positive attitudes regarding school, improved reactions to situations involving drug use, and lower levels of alcohol use relative to the control group (Aseltine, Dupre, & Lamlein, 2000). In contrast, few positive effects of the life skills curriculum or community service activities were observed. However, at the 6-month follow up, all initially significant results were nonsignificant.

Interestingly, although there were no significant differences in use of marijuana from pretest to posttest, at the 6-month follow-up, mentored youth were using significantly less than nonmentored youth (Aseltine et al., 2000).

Second, Rhodes and colleagues (2005) examined the protective influence of mentoring on adolescents' substance use in a sample of BB/BS mentor-mentee pairs. Specifically, they explored parent and peer relationships and self-worth as mediators between mentoring and substance use. The study included 928 young adolescents who applied to the BB/BS program. The adolescents were randomly assigned to either the treatment or control group and administered questionnaires at pretest and 18 months later. Results did not support the conceptual model for most youth. However, results indicated that for youth who were involved in mentoring for longer than one year, parental relationship quality mediated the relationship between mentoring and frequency of substance use (Rhodes et al., 2005). Thus, duration of the mentor relationship seems to provide an opportunity for greater change. Furthermore, the findings highlight the benefits of mentoring interventions on adolescent substance use.

Results from these two studies have important implications for the current study. First, Across Ages provided evidence for changes in substance use initially with older adults mentoring young adolescents. The BB/BS evaluation highlights the importance of relationship duration on substance abuse outcomes. In particular, given their mediation model, in order to see changes both in relationship with parents and then in substance use frequency, it is logical to assume that a longer relationship would be needed. Neither study targeted juvenile delinquents specifically, and neither study utilized college student mentors. Across Ages did not evaluate processes by which mentoring affected drug and alcohol use and the BB/BS evaluation looked solely at self-worth and parental and peer relationships. Nevertheless, these studies provide

preliminary support for evaluating mentoring as a substance abuse prevention measure, and the proposed study seeks to build upon these studies by examining alternative and plausible pathways to prevention.

Summary of effective mentoring strategies. Because of the variability in mentor program effectiveness and the call to evaluate the process of mentoring programs, it is important to review the most important components of mentoring. Effective mentoring strategies are focused in three categories: 1) quality of infrastructure, 2) quantity and quality of mentoring, and 3) empirically- and theoretically-informed programming. Empirical support for each of these categories is evident across studies.

Quality infrastructure includes appropriate screening, training, and ongoing support of mentors. Screening for effective mentors means recruiting individuals who possess important skills and attributes including experience in helping roles (DuBois et al., 2002) and an appreciation of cultural and socioeconomic differences (Hirsch, 2005). Programs that include high-quality training and ongoing support promote high feelings of self-efficacy in the mentor's ability to maintain a successful relationship, which is important to building a high-quality mentoring relationship (Karcher et al., 2006).

Quantity of mentoring refers to the amount, intensity, and duration of the mentor/youth match (Karcher et al., 2006). Replication of the Across Ages program suggests that weekly face-to-face contact for a minimum of 2 hours is necessary for effective programming (Taylor, LoSciuto, & Porcellini, 2005). Other research suggests that longer relationships (more than 12 months) may prove to be more beneficial (Rhodes et al., 2005). Recent research in school-based mentoring suggests that the integrity of the match may be as important as longevity (Grossman,

Chan, Schwartz, & Rhodes, 2012). In time-limited mentoring programs, youth and mentors prepare for the relationship termination resulting in a healthy beginning and end to the match (Dubois et al., 2011). To date, there have been mixed results in determining the duration and intensity that is sufficient for creating positive mentoring results.

Quality of mentoring refers to the effectiveness of the mentor-mentee relationship. There is a consensus in the field that the mentor-mentee relationship is the “active ingredient” in mentoring and that the presence of a strong, emotional connection between mentor and mentee is associated with better outcomes (Rhodes et al., 2006). Engaging in social and academic activities also has been linked to improved relationship quality (Britner & Krammer-Rickaby, 2009). Effective mentors are more likely to take responsibility for sustaining the relationship, respect youth’s viewpoint, pay attention to youth’s need for fun, and utilize help from support staff (Sipe, 2002). Furthermore, youths’ appraisal of the mentoring relationship quality may actually affect their outcomes (Jekielek et al., 2002). Few studies have evaluated their perceptions as an important component of mentoring effectiveness.

Empirically and theoretically informed programming refers to the type of activities the mentor/youth matches engage in. Programs must take into consideration the developmental stage of youth and respond accordingly (Rhodes & DuBois, 2008). In addition, programs mentoring juvenile delinquents are encouraged to provide structured, goal-oriented activities (Rhodes & Spencer, 2010) attuned to youths’ needs (Spencer, 2006). For older adolescents, participation in a job search, job training or school-to-work program has been associated with a lower risk of becoming disconnected from their community (Hair et al., 2009). This finding supports the idea that involvement in programs with caring adults can lower the risk of disconnection among disadvantaged youth. Many juvenile delinquents at risk of substance use experience limited

future orientation (as described above), and may benefit from mentoring programs focused on educational and career outcomes.

The Current Study

Through a review of the relevant literature, the following conclusions can be made about youth mentoring for substance abuse prevention: a) mentor relationship quality and focus of activities are important mechanisms in mentoring; b) mentee and mentor characteristics are influential to the relationship; c) youth socio-emotional assets (resilience) influences positive outcomes; and d) little is known about processes salient to effective mentoring for the prevention of substance abuse in juvenile delinquents, specifically. To date, no known programs have evaluated substance abuse prevention mentoring programs for juvenile delinquents, although this has been recommended (DuBois, Doolittle, Yates, Silverthorn, & Tebes, 2006). The proposed study considered these factors while examining the effectiveness of Campus Corps.

Campus Corps: Therapeutic Mentoring for At-Risk Youth. Campus Corps is an indicated prevention program based on Rhodes' (2002, 2005) developmental model of mentoring. Campus Corps is a 12-week one-to-one mentoring program that serves youth at-risk of entering the juvenile justice system and first-time offenders (ages 11-18). Campus Corps allows youth to a) develop a relationship with a caring adult, b) practice social skills, c) receive academic support, and d) develop a sense of belonging to a supportive community. Campus Corps is held on the Colorado State University campus four evenings per week from 4pm to 8pm. Each youth and their mentor (undergraduate college student) attend once per week (30 mentor-mentee pairs each night). An evening of Campus Corps begins and ends with an hour of lab that only the mentors attend, during which plans to best support mentees are developed.

During the evening, mentors and mentees a) take a walk on campus to connect and build relationship, and learn about campus and various professions, b) work on homework, c) share a meal, and d) engage in prosocial activities, such as cooking, sports, and art. Campus Corps also strives to reduce the recidivism rates of first-time offending youth by engaging them in activities that will improve their educational outcomes and strengthen their life skills, self-confidence, and productive engagement with the community.

Campus Corps was selected for this study because of its focus on deterring youth from negative outcomes, while addressing the relevant correlates of juvenile delinquency, including substance use. In addition to Rhodes' model (described in detail above), Campus Corps draws upon the principles of Social Learning Theory (Bandura, 1977) and Problem Behavior Theory (Jessor & Jessor, 1977). In particular, Campus Corps' theory of change relies on the assumption that the youth's environment, including social relationships, is important. That is, through mentoring, youths' relationship will become increasingly more positive, resulting in opportunities for growth. Social learning theory posits that behavior is learned through observation and modeling. In Campus Corps, role modeling occurs continuously, but specific role modeling can occur when discussing school-related topics, making decisions, and interacting in relationships. Problem behavior theory recognizes the interrelationships among cognitions, attitudes, environment, and personality. Consequently, Campus Corps aims to create an environment in which the interrelationships of a youths' life are both promoting positive behavior (e.g., setting goals for school) and reducing compromising behavior (e.g., redirecting negative behavior). Finally, problem behavior theory calls attention to social support. Campus Corps not only provides a dyadic system of support, but each pair is surrounded by other

matches in a safe, supportive community. Additionally, the mentor community is supervised by family therapists who can provide further support, especially in times of extreme distress.

Additionally, Campus Corps utilizes evidence-based mentor program principles. Campus Corps recognizes the quality of the relationship as foundational to the success of the program and therefore, provides extensive training on relationship building with adolescents. All mentors are enrolled in a 16-week service-learning course that provides training before and during Campus Corps, as well as ongoing supervision and formal reflection. This type of programmatic structure can promote high feelings of self-efficacy in the mentor's ability to mentor. In addition to the mentoring relationship, Campus Corps mentors complete applications that identify mentors who possess important skills and attributes including experience in helping roles (Dubois et al., 2002), sense of self-efficacy, and appreciation of cultural and socioeconomic differences (Hirsch, 2005).

Last, Campus Corps was chosen because it is a therapeutic mentoring program in which one-to-one mentoring exists within a family system framework (i.e., small groups of mentor-mentee pairs working together with a family therapist facilitator). Campus Corps recognizes each pair as a subsystem of the larger Mentor Family (3-4 pairs) in which patterns, rules, boundaries, and alliances exist. Of particular importance is the role of the family therapist facilitator who provides expertise in systemic thinking, as well as clinical interventions (i.e., suicide assessment). Many mentoring pairs exist in isolation, but at Campus Corps each dyad is supported by a Mentor Family who is supported by a family therapist within the Campus Corps community. Additionally, an extensive case management program provides connection to the larger community and provides referrals to other community services as needed. Communication between parents and professional involved with the youths' lives occurs weekly. It is believed that this distinct characteristic of Campus Corps has aided in its success thus far.

Hypotheses. The following hypotheses were based on theoretical and empirical evidence in the extant literature. Additionally, the current study draws from preliminary qualitative data on Campus Corps that indicates positive youth outcomes. Individual interviews were conducted at the end of Fall and Spring 2010 semesters. Results indicate that participants believed Campus Corps had helped them avoid problem behavior and change their attitudes about drugs and alcohol. Participants also indicated that Campus Corps had positively affected their self-esteem, self-confidence, and social skills. Participants' responses revealed that Campus Corps had helped them improve their grades, attendance, and attitudes toward school. Additionally, preliminary results from available pretest posttest data from Spring 2011 ($N = 124$) indicate significant relationships among several key variables. Mentor efficacy was associated with mentor relationship quality, $r = .35, p < .01$. Additionally, youth resilience was significantly related to peer refusal skills, $r = .27$ to $.43, p < .001$. Finally, mentor relationship quality was related to academic self-efficacy ($r = .25, p < .05$) and problem behavior ($r = -.36, p < .001$). Preliminary data suggests that the hypothesized relationships between variables are present (see Figure 1). The current study includes the following hypotheses:

1. Controlling for pretreatment differences, youth who participate in Campus Corps will report lower scores on substance abuse and delinquency outcomes and higher academic achievement at posttest in comparison to the control group.
2. Programmatic support (i.e., mentors perception that they are supported by the program) is associated with mentor efficacy (path 1).
3. Mentor efficacy is associated with mentor relationship quality (path 2).

4. Mentor perception of compatibility with their mentee is associated with mentor relationship quality (path 3).
5. Youth's existing relationships (i.e., positive relationship with a caring adult) are associated with mentor relationship quality (path 4).
6. Youth support-seeking behavior (i.e., mentors' perception that mentees are seeking support) is associated with the focus of mentoring activities (i.e., extent to which the mentoring activities are focused on youth's overall growth and development) (path 5).
7. Youth resilience mediates the relationship between mentor relationship quality and positive outcomes (i.e., decrease in substance abuse and delinquency; increase in academic achievement) (path 6, 7, 10). Similarly, it mediates the relationship between focus of activities and outcomes (path 8, 9, 10).

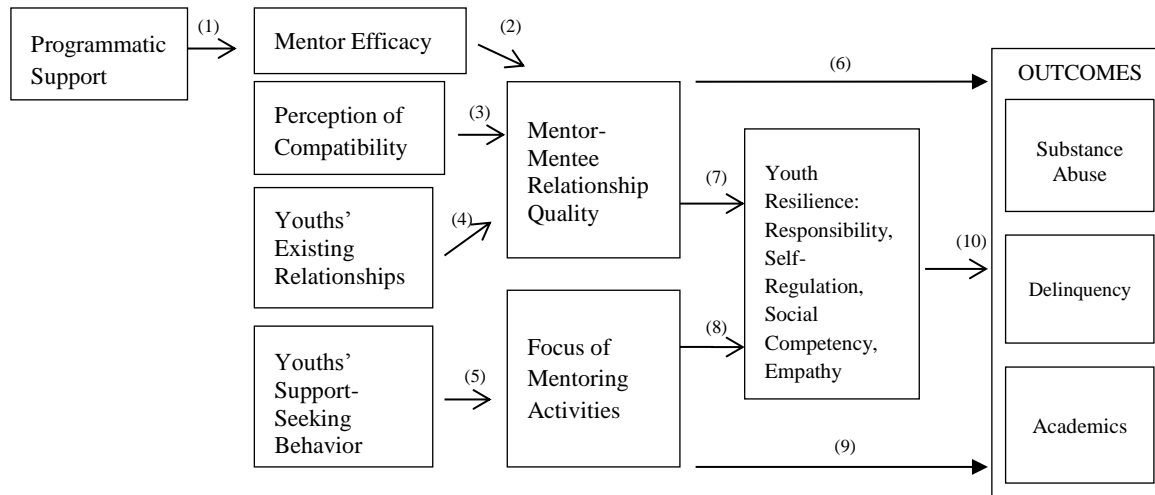


Figure 1. Conceptual Model of Mentoring. Numbers denote paths between variables.

CHAPTER THREE

Method

Participants

Participants were selected based on the following criteria: age and status in Campus Corps. Individuals for the treatment group were between the ages of 11-18 years and participated in Campus Corps. Individuals for the comparison group were also between the ages of 11-18 years and eligible for Campus Corps (i.e., deemed at risk of offending or re-offending by their agency contact), but did not participate in the program due to the limited space in Campus Corps and/or missing the limited recruitment window for participation (June-August for Fall Semester and November-January for Spring Semester). In all, 433 youth consented to participate in the research study. The majority of the youth sample described themselves as Caucasian (nonHispanic) and male. See Table 1 for sample information.

To investigate whether the participants in the treatment and comparison groups differed on demographic characteristics of gender, ethnicity, risk, and legal charge prior to the research study, a chi-square test was conducted. The chi-square test revealed that the groups did not differ on gender, but did differ on ethnicity and legal charge (see Table 1). To investigate whether the participants in the comparison and treatment groups differed on demographic characteristic of age and risk, a *t*-test was performed. The results for the *t*-test indicated that the groups also differed on age, but not risk (see Table 1). As such, gender, ethnicity, legal charge, and age were controlled for in hypothesis testing.

Table 1

Demographic Characteristics of the Treatment and Comparison Groups (N=433)

Variable	Treatment Group (n=298)	Comparison Group (n=135)	Chi-Square/ <i>t</i> -test Value
Age (years)	14.86 (1.95)	15.63 (1.54)	3.93***
Risk	2.15 (1.41)	1.88 (1.56)	1.76
Gender			0.31
Male	60.1%	65.2%	
Female	39.9%	34.8%	
Ethnicity			24.65***
Caucasian (nonHispanic)	51.2%	74.8%	
Hispanic	31.6%	14.8%	
American Indian/Alaskan Native	6.1%	3.0%	
African American/Black	3.7%	4.4%	
Native Hawaiian/Pacific Islander	2.0%	0.0%	
Asian American	1.7%	0.7%	
Other	3.7%	2.2%	
Legal Charge			12.21***
Yes	68.9%	98.0%	
No	31.1%	2.0%	

Note. Standard deviations are presented in parentheses. * $p < .05$, ** $p < .01$, *** $p < .001$

The mentor participant group included 281 mentors of treatment group youth, 243 (86.5%) of whom were female. The mean age was 20.90 ($SD = 3.11$), ranging from 18-50. The majority of the sample (77.0%) described themselves as Caucasian (nonHispanic), 16.1% as Hispanic, 4.2% as Black or African American, 1.9% as Asian American, and 0.9% as Native Hawaiian or Other Pacific Islander. Fifty-seven percent of mentors identified Psychology or Human Development and Family Studies as their primary major, and 74% were completing their

junior or senior year during their time as a mentor. Mentors were enrolled in a 3-credit service-learning course, called Campus Corps, and were included in the study if their youth fit the inclusion criteria and both parties consented.

Procedure

Through established partnerships with the Larimer County Juvenile Justice system and relevant community agencies (e.g., Probation Department), participants for treatment and comparison groups were recruited during Spring 2011, Fall 2011, Spring 2012, and Fall 2012 semesters. Participants who are interested in the research opportunity were informed of the purpose of the study. Informed consent for participation was obtained for all youth participants and at least one guardian. Data for the proposed study was collected through questionnaires. The treatment group questionnaire was completed prior to the program, midway through the program, and at the end of the program. The comparison group pretest was completed after consent was obtained and the posttest was given 12 weeks later. Similarly, data from mentors were collected through questionnaires. Consent for their participation in research was obtained after being presented with study information. Mentors were given their questionnaires prior to training, immediately after training, at week six of the program, and during the final week.

Demographic information for youth (i.e., age, gender, ethnicity, risk and current charge) and mentors' (i.e., age, gender, ethnicity, year in school, and major), pretest levels of resilience and all outcomes, and youths' existing relationships were collected at pretest. Mentor efficacy was measured prior to and after mentor training. Measures related to the mentor-mentee match (e.g., relationship quality) and youth resilience (e.g., responsibility) were collected at week six and posttest. All outcomes were measured again at posttest.

Measures

Participants' demographic information was gathered through self-report. Dummy codes were created for the categorical control variables gender (female = 1, male = 0) and ethnicity, with minority ethnicities valued at '1' and Caucasian (non-Hispanic) valued at '0.' Participant current charge was also dummy coded (yes = 1, no = 0). The Arizona Risk/Needs Assessment instrument (Krysik & LeCroy, 2002) was utilized to assess the youth's level of risk for offending. Referring agency workers completed this survey. The measure included six items, such as "*Has the juvenile ever been assaultive,*" and "*Is the juvenile ever truant or have extensive absenteeism from school.*" The sum of all items was calculated. Higher scores indicate higher levels of risk.

Mentor-mentee relationship quality, activity focus, programmatic support, youth support-seeking behavior, and mentor perception of compatibility. Youth and mentors completed the Youth Mentoring Survey (YMS) and Match Characteristics Questionnaire (MCQ) which are complementary mentor and mentee surveys to assess key characteristics of the mentor match (Harris & Nakkula, 2010). These surveys measure external factors (i.e., programmatic support) and internal factors (i.e., perception of compatibility). They also measure structure (i.e., focus of activities) and relationship quality. Both surveys have strong validity evidence and have been found to predict shifts in youth outcomes (Harris & Nakkula, 2010). Cronbach's alpha ranged from .72 to .87 for the current sample.

Mentor self-efficacy. Mentor self-efficacy was measured by the 9-item Mentor Self-Efficacy Scale (developed by researchers at Campus Corps). A sample item is: "*I am confident*

in my abilities as a mentor.” Greater levels of self-efficacy are indicated by higher mean scores. Cronbach’s alpha for the current sample was equal to .92.

Youth’s existing relationships. The Presence of a Caring Adult (Phillips & Springer, 1992) measure was used to assess youth’s existing relationships. Responses range from *Not at all true* to *Very true*. A sample item is: *“There is no adult I can turn to for guidance.”* Higher mean scores indicate higher levels of existing adult-youth relationships. Cronbach’s alpha for the current sample was equal to .71.

Resilience. The Social-Emotional Assets and Resilience Scales (SEARS; Tom, Merrell, Endrulat, Cohn, & Felver-Gant, 2009) was completed by mentors to assess youths’ self-regulation ($\alpha = .85$), responsibility ($\alpha = .81$), social competency ($\alpha = .89$), and empathy ($\alpha = .88$). Sample items include: *“Feels sorry for others when bad things happen to them”* and *“Stays in control when he/she gets angry.”*

Substance abuse. Four measures were used to assess substance abuse-related outcomes. First, a four-item measure of one’s peer refusal skills was used (Epstein, Botvin, Diaz, Baker, & Botvin, 1997). Participants responded to the prompt *“How likely would you be to...on a scale of definitely would not to definitely would.”* A sample item is: *“Say “no” when someone tries to get you to smoke marijuana or pot.”* Cronbach’s alpha for the current sample was equal to .86. Second, a measure of one’s autonomy from alcohol and marijuana was given (Henry, Shtivelband, Comello, & Slater, 2011). It contains four items in response to the prompts *“NOT using marijuana or spice....”* and *“NOT drinking alcohol...”* Responses range from *strongly disagree* to *strongly agree*. Sample items include: *“Is an important part of who I am”* and *“Is a way of showing my own independence.”* Cronbach’s alpha was equal to .95 for the marijuana

subscale and .97 for the alcohol subscale. Higher scores on each measure indicate more desirable outcomes. The final two measures are described below, with measures of delinquency.

Delinquency. The 13-item Frequency of Problem Behavior (Multisite Violence Prevention Project, 2004) was used. Participants reported the frequency, *0 times to 20 or more times* in the past month that they have participated in the behavior. Sample items include “*Hit someone or gotten into a physical fight*” and “*Smoked marijuana.*” Two subscales were formed to assess 1) frequency of problem behavior ($\alpha = .75$), and 2) frequency of substance use ($\alpha = .63$). Second, the 10-item Perception of Problem (Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998) was used to assess participants’ attitudes toward delinquency. Participants responded to the prompt “*How right is it for you to....*” on a scale of *not at all right to completely all right*. Sample items include: “*Take a drink of alcohol*” and “*Get into fist fights.*” Two subscales were formed to assess 1) perception of problem behavior ($\alpha = .77$), and 2) perception of substance use ($\alpha = .63$). Higher scores on both measures indicate less desirable outcomes.

Academic achievement. At the end of the academic quarter, participants reported how many days of school they missed, as well as their grades on a scale ranging from *mostly F’s to mostly A’s*. Responses were coded as scores on a grade point average scale (ranging from 0.0 to 4.0). Participants’ academic self-efficacy was evaluated with the Motivation and Engagement Scale (Martin, 2010). A sample item is: “*If I try hard, I believe I can do my school work well.*” Responses range from *disagree strongly to agree strongly*. Cronbach’s alpha for the current sample was equal to .89.

CHAPTER FOUR

Results

Prior to hypothesis testing, descriptive statistics were calculated to examine normality of study variables, demographic data, and to uncover trends in relationships among variables. *T*-tests for each variable of interest were conducted to determine if there were significant pre-intervention differences between the treatment and comparison groups (see Table 2). Results indicated no significant difference between groups on attendance, grade point average, autonomy from marijuana use, autonomy from alcohol use, frequency of problem behavior, perception of problem behavior, frequency of substance use, and perception of substance use. Conversely, significant differences were found between groups on academic self-efficacy and peer refusal skills. Thus each of these variables was used as control variables in models that assessed treatment effects. Table 3 presents the correlation matrix for the treatment indicator and key variables at pre- and postintervention.

Table 2

Pre-Intervention Means for Key Variables by Condition

Variable	Treatment		Comparison		95% CI
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	Mean Difference
Missed School Days	2.77	.32	3.55	.39	[-.27,1.83]
Grade Point Average	2.53	.06	2.74	.09	[-.02,.43]
Academic Self-Efficacy	5.81	.07	6.30	.07	[-.29,.68]
Peer Refusal Skills	3.67	.08	4.01	.08	[-.11,.58]
Autonomy from Marijuana Use	3.74	.08	3.70	.11	[-.32,.23]
Autonomy from Alcohol Use	4.00	.07	3.75	.11	[-.52,.02]
Frequency of Substance Use	1.35	.04	1.44	.06	[-.05,.23]
Perception of Substance Use	1.45	.03	1.53	.05	[-.03,.19]
Frequency of Problem Behavior	1.25	.02	1.25	.03	[-.07,.09]
Perception of Problem Behavior	1.41	.02	1.45	.03	[-.03,.12]

Table 3

Correlation Coefficients for Key Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Treatment	1																			
2. Daysmiss	.07	1																		
3. pDaysmiss	-.36**	.37**	1																	
4. GPA	.09	-.27**	.04	1																
5. pGPA	-.24**	-.08	-.11*	.45**	1															
6. AcadSelf	-.21**	-.16**	.01	.28**	.18**	1														
7. pAcadSelf	-.16**	-.10	-.09	.17**	.17*	.42**	1													
8. PeerRef	-.12*	-.06	-.01	.08	.03	.27**	.24**	1												
9. pPeerRef	.03	.01	-.10	-.01	.08	.06	.23**	.24**	1											
10. Marij	.02	-.20**	-.09	.11*	.10	.25*	.17**	.36**	.14**	1										
11. pMarij	.13**	-.07	-.19**	-.05	.04	.12*	.17**	.26**	.37**	.47**	1									
12. Alcohol	.09	-.20**	-.11*	.04	.03	.21**	.13*	.35**	.17**	.69**	.35**	1								
13. pAlcohol	.07	-.12*	-.19**	.03	.04	.11*	.23**	.21**	.37**	.37**	.70**	.40**	1							
14. FreqSub	.06	.10*	.13*	-.06	.03	-.03	.11*	.29**	.18**	.40**	.29**	.31**	.23**	1						
15. pFreqSub	-.18**	.01	.16**	-.04	-.05	-.03	-.02	-.07	-.22**	-.20**	-.23**	-.24**	-.28**	.22**	1					
16. PercSub	.07	.06	.12*	-.08	-.07	-.08	-.09	-.87**	.19**	.44**	.28**	.38**	.30**	.51**	.23**	1				
17. pPercSub	-.27**	.12*	.17**	.01	-.02	-.06	-.04	.15**	.28**	.34**	.40**	.39**	.43**	.30**	.56**	.44**	1			
18. FreqPrb	.01	.15**	.20**	-.21**	-.01	-.21**	.17**	.22**	.15**	.17**	.18**	.17**	.20**	.34**	.14**	.28**	.21**	1		
19. pFreqPrb	-.14*	.12*	.15**	.13*	.15**	.18**	.20**	.108	.18**	.10**	.16**	.11*	.26**	.05	.63**	.06	.36**	.19**	1	
20. PercPrb	.05	.10*	.12*	-.14**	.06	.13*	.13*	.26**	.29**	.34**	.31**	.35**	.37**	.34**	.22**	.54**	.44**	.40**	.14**	1
21. pPercPrb	.09	.12*	.13*	-.07	.13*	.15**	.14**	.16**	.22**	.33**	.26**	.30**	.31**	.18**	.40**	.36**	.64**	.22**	.42**	.58**

Note. * $p < .05$, ** $p < .001$; p = posttest; AcadSelf = Academic Self Efficacy, PeerRef = Peer Refusal Skills, Marij = Autonomy from Marijuana Use, Alcohol = Autonomy from Alcohol Use, FreqSub = Frequency of Substance Use, PercSub = Perception of Substance Use, FreqPrb = Frequency of Problem Behavior, PercPrb = Perception of Problem Behavior.

Assessing Treatment Effects

To test hypothesis one, a series of linear regression models were estimated to determine if there were significant postintervention differences between the treatment and comparison condition for the variables of interest, after adjusting for key background factors and preintervention levels of all variables. Prior to hypothesis testing, assumptions for multiple regression analyses were assessed. Linearity was assessed through partial regression plots and the normality of the residuals was assessed through a histogram and normal probability plot. To evaluate influential data points and outliers, studentized deleted residual and Cook's Distance were calculated. Studentized deleted residuals greater than the absolute value of 3 were investigated further by examining the level of influence through Cook's Distance. The Variance Inflation Factor was used to detect issues with multicollinearity. Finally, the homogeneity of variance assumption was evaluated by determining if the residual variances held constant across values of the independent variables. All, but two, models met the necessary assumptions to complete the regression analyses. To account for left-censoring data on the frequency of problem behavior and frequency of substance use variables (i.e., high frequencies of participants reporting no engagement in such behaviors), a Tobit model was specified to assess for treatment effects regarding these dependent variables. Utilizing a Tobit model is more appropriate than ignoring the censored data distribution or excluding individuals with scores of zero (McBee, 2010).

First, a series of linear regression models were specified for attendance, grade point average, academic self-efficacy, peer refusal skills, autonomy from substance use, perception of substance use, and perception of problem behavior. For each outcome, age, gender, ethnicity, charge, academic self-efficacy, peer refusal skill, Time 1 (i.e., pretest) measure of the outcome of interest, and the treatment indicator served as predictors of the Time 2 (i.e., posttest) measure of

the outcome of interest. Each control was centered at the mean. SPSS was used to estimate each model. Table 4 presents the postintervention adjusted means for all variables (adjusted for background variables and pre-intervention levels of all variables) by condition calculated from the linear regression models.

Second, for models assessing the treatment effect on frequency of problem behavior and frequency of substance use, a Tobit model was specified due to a substantial floor effect. In each model, age, gender, ethnicity, charge, academic self-efficacy, peer refusal skill, Time 1 measure of the outcome of interest, and the treatment indicator served as predictors of the Time 2 measure of the outcome of interest. Each control was centered at the mean. SAS 9.3 (PROC QLIM) was used to estimate each model. Table 4 also presents the post-intervention adjusted means for frequency of problem behavior and frequency of substance use.

Table 4

Post-Intervention Adjusted Means for Key Variables by Condition

Variable	Treatment		Comparison		95% CI	Effect Size
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	Mean Difference	Cohen's <i>d</i>
Attendance	1.21	.57	4.91	.72	[-4.68,-2.70]	.37
Grade Point Average	2.52	.13	2.92	.17	[-.63,-.17]	.18
Academic Self-Efficacy	6.17	.15	6.21	.18	[-.29,.21]	n/a
Peer Refusal Skills	4.13	.17	3.96	.22	[-.12,.46]	n/a
Autonomy from Marijuana Use	3.97	.16	3.34	.20	[.36,.89]	.23
Autonomy from Alcohol Use	3.96	.18	3.78	.22	[-.11,.49]	n/a
Perception of Substance Use	1.27	.07	1.56	.09	[-.41,-.18]	.18
Perception of Problem Behavior	1.40	.05	1.40	.07	[-.09,.09]	n/a
Frequency of Substance Use*	0.75	.17	0.99	.20	[-.41,-.05]	.24
Frequency of Problem Behavior*	0.21	.09	0.44	.08	[-.34,-.11]	.12

Note. Each model adjusted for age, gender, ethnicity, charge, academic self-efficacy, peer refusal skill, and Time 1 levels of the outcome of interest. *Indicates Tobit Model results.

Significant treatment effects were observed for attendance, autonomy from marijuana use, frequency of substance use, and perception of substance use, indicating that participants in the treatment condition had significantly better scores at postintervention than participants in the

comparison condition (adjusting for background covariates and preintervention levels of key variables). A significant effect was also observed for grade point average; however this effect indicated significant change for comparison group participants, not treatment participants. All other postintervention differences were nonsignificant. Results from the Tobit models indicate a desirable and significant treatment effect in decreasing substance use and problem behavior.

Evaluating the Conceptual Model

Structural equation models (SEM) were specified to examine the research questions associated with the remaining hypotheses, following the conceptual model in Figure 1. As described by Schumacker and Lomax (2010) and Byrne (2001), SEM is appropriate for theory testing and allows one to go beyond ordinary regression models to include multiple independent and dependent variables. SEM was chosen as an appropriate analysis for the current study because it allows for simultaneous testing of regression equations and for analysis of latent and observed variables. The typical approach to estimating SEM models occurs in two steps, beginning with estimation of the measurement model and concluding with the full structural model. All models were estimated using Mplus software. The variables were examined at pretest (T1), midway (T2), and posttest (T3) according to the schedule described above.

First, the measurement model was examined for goodness of fit. Individual items were standardized and coded so that higher scores were more desirable for all variables. Then, parcels were created to obtain more continuous and normally distributed observed data, as well as to reduce the number of model parameters (Bandalos, 2002; Hau & Marsh, 2004; Marsh, Hau, Balla, & Grayson, 1998). Little, Cunningham, Shahar, and Widaman (2002) defined a parcel as “an aggregate-level indicator comprised of the mean of two or more items” (p. 152). It is

recommended that parcels are created to counterbalance skewness (Hau & Marsh, 2004) and to balance positively and negatively worded items (Hilton et al., 2004). These recommendations were followed and each parcel can be seen in Figure 2, indicated by squares. Programmatic Support, Youth's Existing Relationships, Mentor Efficacy, Perception of Compatibility, Youth Support-Seeking Behavior, Relationship Quality, and Mentoring Focus included parcels from individual items on each of their corresponding measures. Youth Resilience included four parcels, one for each subscale of the SEARS (Tom et al., 2009; RE-Responsibility, SC-Social Competence, EM-Empathy, and SR-Self Regulation). Similarly, Substance Use, included parcels for each of the substance use measures (i.e., AU1-Autonomy from Marijuana Use (Henry et al., 2011); AU2-Autonomy from Alcohol Use (Henry et al., 2011); SK-Peer Refusal Skills (Epstein et al., 1997); BEH1-Frequency of Substance Use (Multisite Violence Prevention Project, 2004); and PERC1-Perception of Problem Behavior (Loeber et al., 1998)). Delinquency included similar parcels for Frequency of Problem Behavior (BEH2) and Perception of Problem Behavior (PERC2). Lastly, Academics included parcels for GPA, Attendance (ATD), and Academic Self-Efficacy (SE; Martin, 2010). See Figure 2 for full hypothesized model.

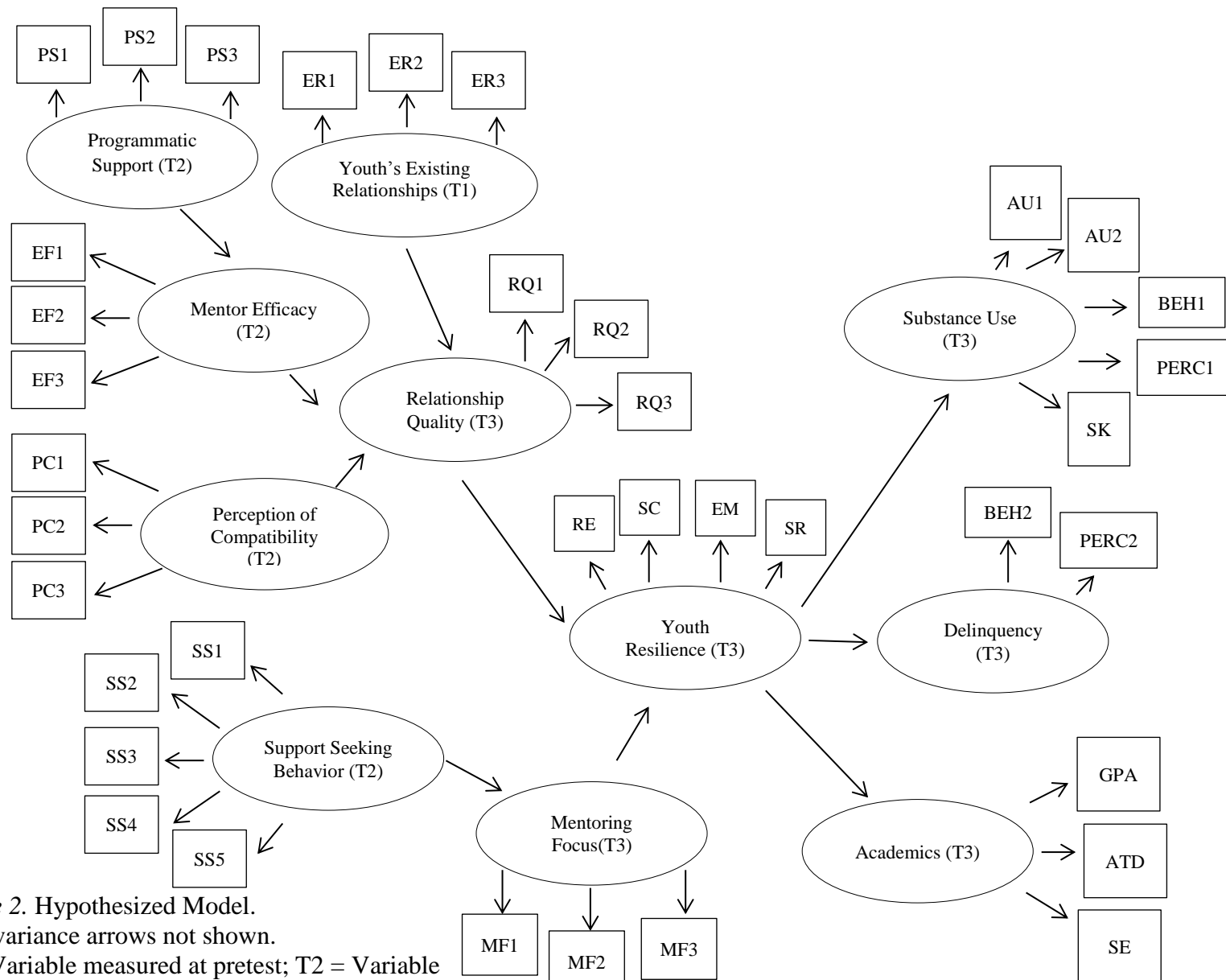


Figure 2. Hypothesized Model.
 Error variance arrows not shown.
 T1 = Variable measured at pretest; T2 = Variable measured at midway; T3 = Variable measured at posttest.

To evaluate measurement model fit, five indices were used: the chi-square test of overall model fit, the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), and the Standardized Root Mean Square Residuals (SRMR). RMSEA below .05 in combination with SRMR values below .09 will indicate excellent fit, whereas values below .08 and .10, respectfully, will indicate a good fit (Hu & Bentler, 1999). CFI and TLI values larger than .90 will indicate a good fit, while values above .95 will indicate excellent fit (Bentler, 1990). The measurement model fit the data reasonably well: $\chi^2_{[574]} = 1838.481$, RMSEA=.087, SRMR= .023. CFI=.950, and TLI=.942. Although the RMSEA value was higher than anticipated, the other indices indicated good fit. However, the latent variable covariance matrix was not positive definite, indicating a correlation greater or equal to one between two latent variables. In fact, Delinquency was correlated with Substance Use. Thus, the full structural model was estimated for two separate models (one for each of the two latent variables).

Next, two structural models were estimated, one including Substance Use and one including Delinquency. First, results of Model 1 (Substance Use) are given, followed by Model 2 (Delinquency). Examination of Model 1 fit indices initially indicated poor fit: $\chi^2_{[544]} = 2920.719$, RMSEA=.125, SRMR= .331. CFI=.899, and TLI=.889. A review of the modification indices (MIs) indicated large MIs for the residual covariance between Relationship Quality and Mentoring Focus, AU1 (parcel for autonomy from marijuana use) and AU2 (parcel for autonomy from alcohol use), and PERC1 (parcel for perception of substance use) and BEH1 (parcel for frequency of substance use behavior). As recommended by Bryne (2011), only one new parameter at a time was included in respecifying the model. Thus, Model 1a included an estimation of the residual covariance between Relationship Quality and Mentoring Focus. Examination of Model 1a fit indicated slightly better fit, yet still poor: $\chi^2_{[543]} = 2315.156$,

RMSEA=.107, SRMR= .310. CFI=.925, and TLI=.917. Further review of the MIs indicated large values for the residual covariance between AU1 and AU2, and PERC1 and BEH1. Thus, Model 1b included estimation of the residual covariance between AU1 and AU2. Examination of Model 1b fit indicated only slightly better fit than Model 1a: $\chi^2_{[543]} = 2151.513$, RMSEA=.102, SRMR= .310. CFI=.931, and TLI=.925. Model 1c included the remaining residual covariance between PERC1 and BEH1, indicating slightly better fit: $\chi^2_{[541]} = 2003.090$, RMSEA=.097, SRMR= .310. CFI=.938, and TLI=.932. After including all relevant parameters as indicated by large MIs, an examination of the estimated parameters in Model 1c indicated that most were significant ($p < .05$). Thus, to find the best fitting, parsimonious model, all nonsignificant parameters (i.e., Relationship Quality \rightarrow Youth Resilience, Mentoring Focus \rightarrow Youth Resilience, Youth Resilience \rightarrow Substance Use, Youth Resilience \rightarrow Academics, and Mentoring Focus \rightarrow Academics) were deleted, resulting in Model 1d. Additionally, mediation analyses (included in Hypothesis 7) were not conducted due to nonsignificant findings on necessary paths. Model 1d fit the data well: $\chi^2_{[451]} = 784.917$, RMSEA=.052, SRMR= .046. CFI=.981, and TLI=.979. A Chi-square difference test indicated that the trimmed model was significantly different than Model 1c ($p < .001$). Thus, the final model (Model 1d) was retained (see Figure 3).

As indicated in Figure 3, perception of program support was positively associated with mentor efficacy. Additionally, youth's existing relationships, mentor efficacy, and perception of compatibility were positively related to mentor-mentee relationship quality. Furthermore, youth support-seeking behavior was positively associated with the focus of mentoring activities. Mentor relationship quality predicted substance use and academic outcomes; whereas mentoring focus predicted only substance use.

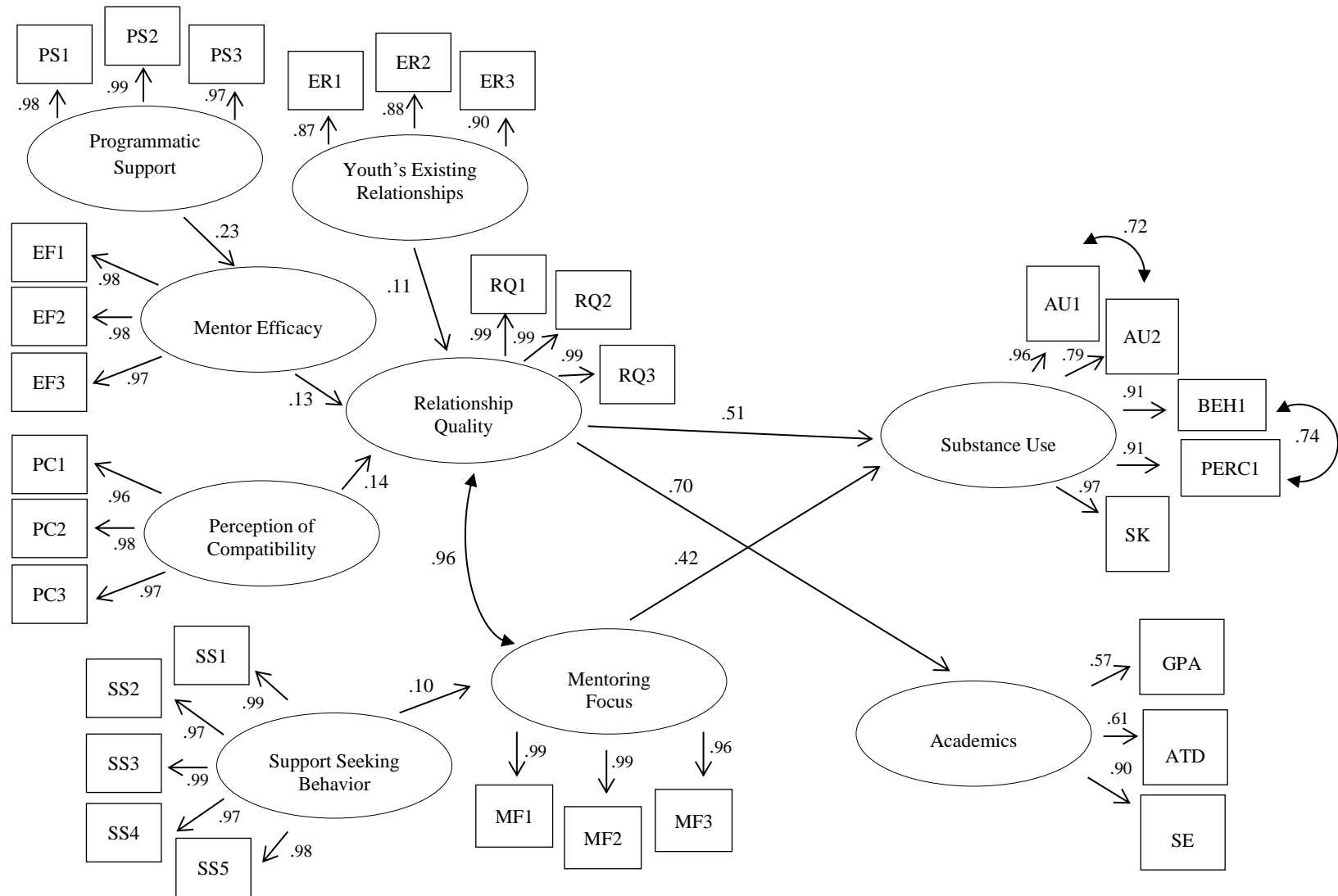


Figure 3. Structural equation model of mentoring (substance use). Values are standardized parameter estimates. All values shown are statistically significant, $p < 0.05$.

Second, results of Model 2 (Delinquency) are presented. Examination of Model 2 fit indices initially indicated poor fit: $\chi^2_{[448]} = 2313.100$, RMSEA=.121, SRMR= .323. CFI=.913, and TLI=.904. Similar to Model 1 (Substance Use), a large MI was observed for the residual covariance between Relationship Quality and Mentoring Focus. Thus, Model 2a included an estimation of the residual covariance between Relationship Quality and Mentoring Focus. Examination of this model fit indicated slightly better fit: $\chi^2_{[447]} = 1707.537$, RMSEA=.099, SRMR= .298. CFI=.941, and TLI=.935. After including this relevant parameter, all nonsignificant parameters (i.e., Relationship Quality → Youth Resilience, Mentoring Focus → Youth Resilience, Youth Resilience → Delinquency, Youth Resilience → Academics, and Mentoring Focus → Academics) were deleted, resulting in Model 2b. Additionally, mediation analyses (included in Hypothesis 7) were also not conducted with Model 2b due to nonsignificant findings on necessary paths. Model 2b fit the data well: $\chi^2_{[333]} = 617.175$, RMSEA=.050, SRMR= .043. CFI=.984, and TLI=.982. A Chi-square difference test indicated that the trimmed model was significantly different than Model 2a ($p < .001$). Thus, the final model (Model 2b) was retained (see Figure 4).

As indicated in Figure 4, similar paths were found for Model 2a as Model 1d. Perception of program support was positively associated with mentor efficacy. Youth's existing relationships, mentor efficacy and perception of compatibility were positively related to mentor-mentee relationship quality, and youth support-seeking behavior was positively associated with mentoring focus. Last, mentor relationship quality predicted delinquency and academic outcomes, whereas mentoring focus predicted only delinquency.

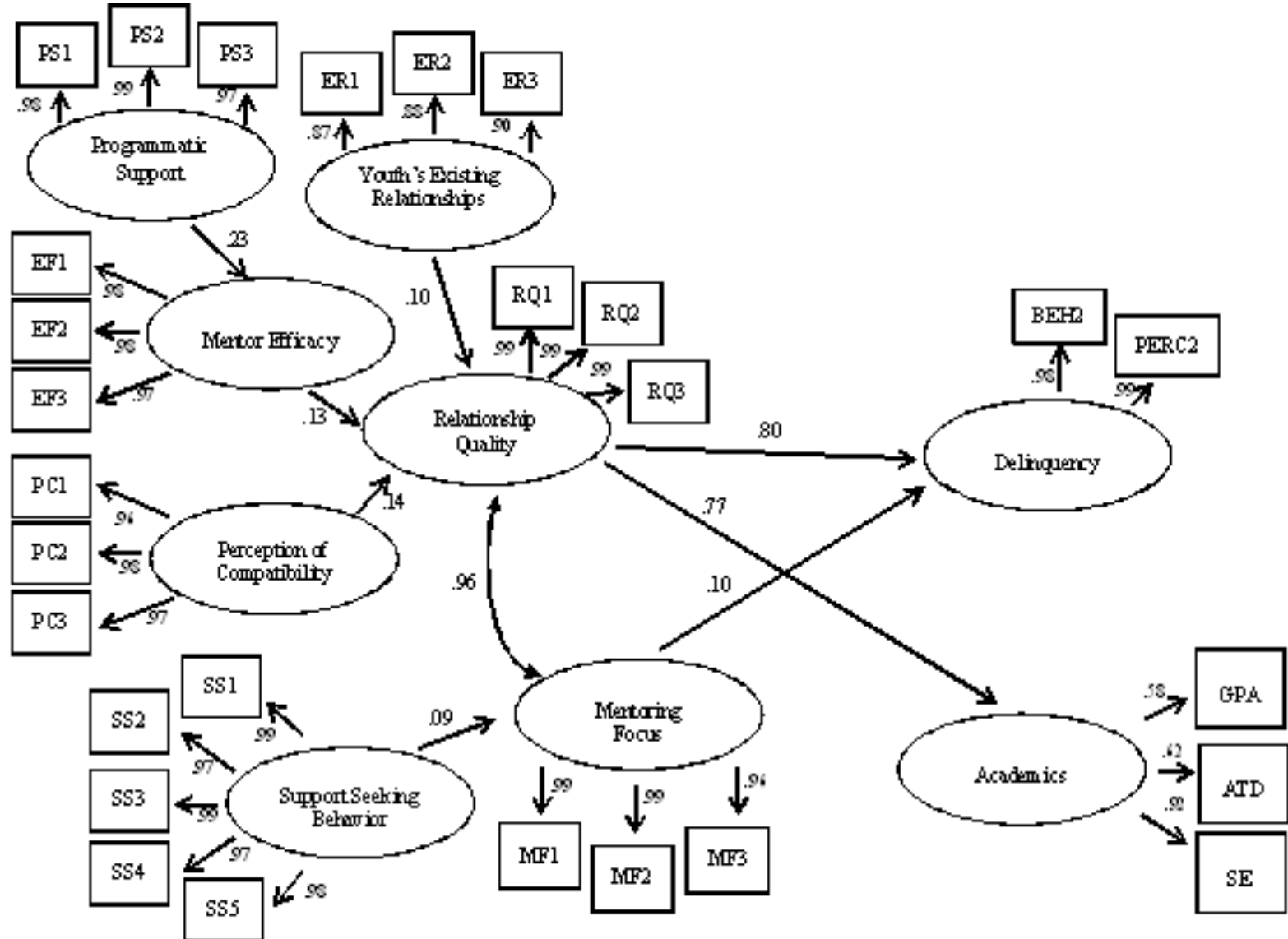


Figure 4. Structural equation model of mentoring (delinquency). Values are standardized parameter estimates. All values shown are statistically significant, $p < 0.05$.

CHAPTER FIVE

Discussion

The purpose of the current study was to investigate the effectiveness of Campus Corps: Therapeutic Mentoring for At-Risk Youth as a substance abuse prevention program for juvenile delinquents and to identify the mechanisms by which mentoring affects positive outcomes. Results revealed that after participating in Campus Corps, participants decreased the number of school days they missed in the previous month, the frequency of their substance use, and the frequency of their problem behavior, as compared to a no-treatment group. Findings also indicated increased autonomy from marijuana use and more appropriate attitudes toward substance use, as a result of participating in Campus Corps. These findings are consistent with Aseltine et al. (2000) and Rhodes et al. (2005). However, unlike Rhodes and colleagues who found treatment effects only in participants who were mentored for 12 months or more, the current study supports improved substance use-related outcomes after only a 12-week program.

Participation in mentoring through Campus Corps affected two important correlates of substance use - frequency of delinquent behavior and truancy. Tierney and Grossman (1995) also found a decrease in truancy among participants in the Big Brother/Big Sister community mentoring programs. Similarly, Novotney, Mertinko, Lange, and Baker (2000) found that as a result of participation in the Juvenile Mentoring Program, youth reported positive experiences with respect to school achievement, abstention from drugs and alcohol, and avoidance of violence.

However, treatment benefits were not found for academic self-efficacy, peer refusal skills, autonomy from alcohol use, or perceptions of problem behavior. Additionally, a

significant effect for grade point average was observed in favor of the comparison group participants. These results are in contrast to Zand et al. (2009) who found a positive association between mentor-mentee alliance and peer resistance skills and feelings of self-efficacy related to substance use. Thompson and Kelly-Vance (2001) found significantly higher academic gains for mentored boys than non-mentored boys; however, others have found similar results to the current study. For example, Rhodes, Grossman, and Resch (2003) found direct effects of mentoring on reducing unexcused absences, but that improvement in perception of school value and grades was not a direct effect of mentoring. Further research is needed to determine the consistency of these contradictory findings.

Beyond assessing treatment effects, the current study also evaluated a conceptual model of youth mentoring to explore the mechanisms by which positive change occurs. Results of both models revealed nonsignificant pathways from relationship quality and mentoring focus to youth resilience and from youth resilience to academic, substance use, and delinquency-related outcomes. Thus, a surprising finding of the current study is that youth resilience did not mediate the relationship between mentoring relationship quality and mentoring focus and youth outcomes, as suggested by Rhodes' (2002, 2005) model of youth mentoring. One possible explanation for this finding may be related to the use of time-limited mentoring in the current study, whereas Rhodes' model may be more suitable for relationships of 12 months or longer.

As predicted, hypothesized paths to higher relationship quality were supported in each of the models. First, mentors' perception of support from the Campus Corps program predicted sense of mentoring efficacy. In turn, mentoring self-efficacy predicted mentoring relationship quality. This finding confirms the process-oriented model evaluated by Parra et al. (2002) which also found that mentors' sense of efficacy prior to beginning the relationship predicted greater

amounts of contact and more positive experiences within the relationship. This process-oriented model also is consistent with the current study due to the confirmed pathway linking feelings of closeness between mentors and mentees to greater perceived benefits (Parra et al., 2002).

Next, each model revealed that the presence of youths' positive existing relationships was positively associated with relationship quality. This finding confirms the previous results from Zand and colleagues (2009) which indicated that youth with better preexisting adult relationships formed higher-quality mentoring relationships. Finally, mentors' perception of compatibility predicted relationship quality in each model. Dubois et al. (2002) found similar results in their meta-analysis, stating that positive youth outcomes are more likely to occur when there is a high-quality mentor-mentee relationship, based on respect, trust, compatibility, and closeness.

Beyond the pathways leading to higher mentoring relationship quality, each model contributed further understanding to the focus of mentoring activities. Specifically, mentors' perception of youth support-seeking behavior predicted mentoring focus. That is, youth who appear to be seeking assistance, comfort, and support from mentors are more likely to participate in mentoring activities focused on the growth of the mentee (as opposed to having fun, instrumental support only, or lack of focus). Although no known studies have evaluated the link between youth behavior and focus of activities, it makes intuitive sense that youth who are more open to help from their mentor would receive higher-quality services. This finding, as with many of the others, should be replicated to determine its significance.

In addition to these paths, the models also revealed that relationship quality and mentoring focus covaried and predicted positive youth outcomes. Results of both models revealed that relationship quality predicted positive youth outcomes related to substance use,

delinquency, and academics; whereas mentoring focus only predicted desirable substance use and delinquency outcomes. One explanation for why mentoring focus may not have been related to academic outcomes is that the mentoring focus variable measured in the current study was focused on overall growth and character development, as opposed to an instrumental focus (i.e., academic support). The mentor-mentee relationship quality finding, however, is consistent with much of the mentoring literature that higher quality relationships within a supportive, trustworthy, and developmentally-appropriate structure leads to better outcomes (e.g., Dubois et al., 2002). Jekielek et al. (2002) also found that youth who perceive their mentoring relationship as a high-quality experience have better results than youth who do not. Furthermore, engaging in social and academic activities also has been linked to improved relationship quality (Britner & Kraimer-Rickaby, 2009), and mentors that focus on mentee's growth by taking responsibility for sustaining the relationship, respecting youth's viewpoint, paying attention to youth's need for fun, and utilizing help from support staff are effective (Sipe, 2002). Thus, the current study confirms what is known about some of the 'active ingredients' in mentoring.

Limitations

As with any study, these results and interpretations of the conceptual model should be interpreted in light of its limitations. The current study sought to evaluate a limited topic within youth mentoring evaluation – substance use prevention – and to fill a gap in the mentoring literature by more clearly identifying specific pathways of influence on mentoring outcomes. The first limitation in the study is the lack of random assignment to treatment and comparison conditions, limiting the internal validity of the study. To this end, the treatment and comparison groups were significantly different on a number of variables. In particular, nearly all of the participants in the comparison group had a formal charge prior to the study, as compared to

nearly 70% of the treatment group. To account for this, group equivalency was evaluated prior to assessing treatment effects, all any difference were controlled for in analyses. Second, the current study utilized youth and mentor self-report measures which may allow for bias. Although more objective measures may be preferred for outcomes such as attendance and frequency of problem behavior, self-report measures are helpful when assessing a participants' feelings, thoughts, attitudes, and perceptions. Given the nature of the study, use of self-report measures on such variables as perception of compatibility and mentor self-efficacy, was appropriate and may be preferred. Third, the conceptual model was evaluated despite non-significant treatment effects on some key outcomes. Findings significant between-group differences related to treatment effects is usually preferred before evaluating within-group processes; however, due to the novelty of evaluating mentoring processes, the current study may still contribute insights into future research on the topic.

Future Research

The current study results revealed that mentoring juvenile delinquents for substance use prevention may be a promising intervention. Further research is needed to determine the degree to which mentoring can effect substance use-related outcomes in juvenile delinquents, but this study provides preliminary evidence that mentoring may decrease frequency of substance use while improving youths' attitudes and sense of independence from using marijuana. Existing programs should consider evaluating their effectiveness on these outcomes. Relatedly, mentoring initiatives would benefit from evaluation of mentoring's effectiveness in reducing relevant correlates of substance use – e.g., delinquency and truancy - within a population of youth at risk for serious delinquency. Whenever possible, it is also recommended to complete random assignment of participants to groups when evaluating treatment effects.

Additionally, further evaluation of mentoring processes is needed. As described previously, the mentoring field is relatively new and theoretical models currently lack the sophistication to evaluate key mechanisms. In particular, further refinement and replication of the models in this study is greatly needed. Additionally, mentoring research would benefit from an evaluation of moderating mechanisms, such as youth level of risk, age, gender, ethnicity, and related match characteristics (e.g., gender matching, cultural matching). Lastly, longitudinal data analysis is recommended, including long-term follow-up, to assess direction and impact of each process.

Implications

Results from the structural equation models provide valuable information for mentors and mentoring program supervisors. In particular, to improve mentoring relationship quality, it is important that mentors feel supported within their program, confident in their abilities, and compatible with their mentees. Supporting and guiding mentors who do not feel initially compatible or confident is especially important when working with vulnerable youth, given the potential for adverse effects due to failed relationships (Rhodes, Reddy, Roffman, & Grossman, 2002). Providing ongoing training for mentors, structured activities, and expectations for contact have been associated with more desirable outcomes (Stutkas & Kanti, 2005). Additionally, assessing youths' relationships with adults prior to mentoring may provide valuable information to the mentor. For instance, a youth who struggles in his or her relationships with adults will likely need more time to build social competence within the mentoring relationship as compared to a youth who brings those skills to the relationship. Next, the focus of mentoring activities is important given the hypothesis that a close connection may in fact be a secondary gain from engagement in activities (Hamilton & Hamilton, 2010). In particular, focusing on the growth of

the mentee as an all-around person appears to lead to better outcomes related to substance use and delinquency. Thus, training mentors to find such a balanced approach to mentoring may be important to overall success.

Conclusion

All in all, the current study provides evidence for the plausibility of mentoring for substance use prevention in juvenile delinquents. It further highlights key processes involved with youth mentoring. Such processes may inform future research and practice. It remains to be important that mentoring programs should continue to monitor key process variables, implementation strategies, and mentor/mentee outcomes.

REFERENCES

- Aseltine, R. H., Dupre, M., & Lamlein, P. (2000). Mentoring as a drug prevention strategy: An evaluation of Across Ages. *Adolescent & Family Health, 1*, 11-20.
- Barron-McKeagney, T., Woody, J. D., & D'Souza, H. J. (2003). Youth mentoring: Emerging questions about effects on self-concept and school performance. *School Social Work Journal, 28*, 52-67.
- Belsky, J., & Cassidy, J. (1994). Attachment and close relationships: An individual-difference perspective. *Psychological Inquiry, 5*, 27-30. doi: 10.1207/s15327965pli0501_3
- Bentler, P. M. (1990). Fit indexes, Lagrange multipliers, constraint changes and incomplete data in structural models. *Multivariate Behavioral Research, 25*, 163-172. doi:10.1207/s15327906mbr2502_3
- Bollen, K. A. (1989). *Structural equations with latent variables*. Oxford, England: John Wiley & Sons.
- Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. New York: Basic Books.
- Britner, P. A., Balcazar, F. E., Blechman, E. A., Blinn-Pike, L., & Larose, S. (2006). Mentoring special youth populations. *Journal of Community Psychology, 34*, 747-763. doi: 10.1002/jcop.20127
- Britner, P. A., & Krammer-Rickaby, L. (2009). Mentoring and its role in promoting academic and social competency. In T. P. Gullotta, M. Bloom, C. F. Gullotta & J. C. Messina (Eds.), *A blueprint for promoting academic and social competence in after-school programs* (pp. 79-100). New York: Springer.
- Burrow-Sanchez, J. J. (2006). Understanding adolescent substance abuse: Prevalence, risk factors, and clinical implications. *Journal of Counseling & Development, 84*, 283-290. doi:10.1002/j.1556-6678.2006.tb00407.x
- Byrne, B. M. (2001). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Byrne, B. M., Shavelson, R. J., & Muthén, B. (1989). Testing for the equivalence of factor covariance and mean structures: The issue of partial measurement invariance. *Psychological Bulletin, 105*, 456-466. doi: 10.1037/0033-2909.105.3.456
- Center on Addiction and Substance Abuse [CASA]. (2004). *Criminal neglect: Substance abuse, juvenile justice, and the children left behind*. New York: Columbia University.
- Center for Substance Abuse Prevention [CSAP]. (2000). *Mentoring initiatives: An overview of youth mentoring*. Substance Abuse and Mental Health Services Administration.

- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. (2nd Ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Corrigan, M. J., Loney, B., Videka, L., & Brown, M. C. (2007). Moving the risk and protective factor framework toward individualized assessment in adolescent substance abuse prevention. *Journal of Child & Adolescent Substance Abuse*, 16, 17-34. doi:10.1300/J029v16n03_02
- Dembo, R., Wareham, J., Poythress, N., Cook, B., & Schmeidler, J. (2006). The correlates and consequences of drug involvement among youths entering a juvenile justice diversion program. *Journal of Child & Adolescent Substance Abuse*, 15, 1-36. doi:10.1300/J029v15n04_01
- Dodgen, C. E., & Shea, W. M. (2000). *Substance use disorders: Assessment and treatment*. San Diego, CA: Academic Press.
- DuBois, D. L., Doolittle, F., Yates, B. T., Silverthorn, N., & Tebes, J. K. (2006). Research methodology and youth mentoring. *Journal of Community Psychology*, 34, 657-676. doi:10.1002/jcop.20122
- DuBois, D. L., Holloway, B. E., Valentine, J. C., & Cooper, H. (2002). Effectiveness of mentoring programs for youth: a meta-analytic review. *American Journal of Community Psychology*, 30, 157-197. doi: 10.1023/a:1014628810714
- DuBois, D. L., & Neville, H. A. (1997). Youth mentoring: Investigation of relationship characteristics and perceived benefits. *Journal of Community Psychology*, 25, 227-234. doi:10.1002/(sici)1520-6629(199705)25:3<227::aid-jcop1>3.0.co;2-t
- DuBois, D. L., Neville, H. A., Parra, G. R., & Pugh-Lilly, A. O. (2002). Testing a new model of mentoring. In J. E. Rhodes (Ed.), *A critical view of youth mentoring* (pp. 21-57). San Francisco, CA: Jossey-Bass.
- DuBois, D. L., Portillo, N., Rhodes, J. E., Silverthorn, N., & Valentine, J. C. (2011). How effective are mentoring programs for youth? A systematic assessment of the evidence. *Psychological Science in the Public Interest*, 12, 57-91. doi: 10.1177/1529100611414806
- Eby, L. T., Allen, T. D., Evans, S. C., Ng, T., & DuBois, D. L. (2008). Does mentoring matter? A multidisciplinary meta-analysis comparing mentored and non-mentored individuals. *Journal of Vocational Behavior*, 72, 254-267. doi: 10.1016/j.jvb.2007.04.005
- Epstein, J. A., Botvin, G. J., Diaz, T., Baker, E., & Botvin, E. M. (1997). Reliability of social and personal competence measures for adolescents. *Psychological Reports*, 81, 449-450. doi:10.2466/pr0.81.6.449-450
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41, 1149-1160. doi: 10.3738/brm.41.4.1149

- Fergusson, D. M., Lynskey, M. T., & Horwood, L. J. (1996). Alcohol misuse and juvenile offending in adolescence. *Addiction*, *91*, 483-494. doi:10.1111/j.13600443.1996.tb02302.x
- Grossman, J. B., Chan, C. S., Schwartz, S. E., & Rhodes, J. E. (2012). The test of time in school-based mentoring: The role of relationship duration and re-matching on academic outcomes. *American Journal of Community Psychology*, *49*, 43-53. doi:10.1007/s10464-011-9435-0
- Grossman, J. B., & Rhodes, J. E. (2002). The test of time: Predictors and effects of duration in youth mentoring relationships. *American Journal of Community Psychology*, *30*, 199-219. doi: 10.1023/a:1014680827552
- Haegerich, T. M., & Tolan, P. H. (2008). Core competencies and the prevention of adolescent substance use. *New Directions for Child & Adolescent Development*, *122*, 47-60. doi:10.1002/cd.228
- Hair, E. C., Moore, K. A., Ling, T. J., McPhee-Baker, C., Brown, B. V., & Child, T. (2009). Youth who are "disconnected" and those who then reconnect: Assessing the influence of family, programs, peers and communities. Washington, DC: Child Trends.
- Hamilton, S. F., & Hamilton, M. A. (2010). Building mentoring relationships. *New Directions for Youth Development*, *126*, 141-144. doi: 10.1002/yd.354
- Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*, *112*, 64-105. doi: 10.1037/0033-2909.112.1.64
- Hawkins, J. D., Kosterman, R., Catalano, R. F., Hill, K. G., & Abbott, R. D. (2005). Promoting positive adult functioning through social development intervention in childhood : Long-term effects from the Seattle Social Development Project. *Archives of Pediatrics & Adolescent Medicine*, *159*, 25-31. doi:10.1080/15564880701263049
- Hayes, A. M., Castonguay, L. G., & Goldfried, M. R. (1996). Effectiveness of targeting the vulnerability factors of depression in cognitive therapy. *Journal of Consulting and Clinical Psychology*, *64*, 623-627. doi: 10.1037/0022-006x.64.3.623
- Henry, K. L., Shtivelband, A., Comello, M. L. G., & Slater, M. D. (2011). The belief that alcohol use is inconsistent with personal autonomy: A promotive factor for younger adolescents. *Journal of Alcohol and Drug Education*, *55*, 37-54.
- Hirsch, B. J. (2005). *A place to call home: after-school programs for urban youth*. Washington, DC: American Psychological Association. doi:10.1037/11087-000
- Jekielek, S., Moore, K. A., & Hair, E. C. (2002). *Mentoring programs and youth development: A synthesis*. Washington, DC: Child Trends.

- Karcher, M. J., Kuperminc, G. P., Portwood, S. G., Sipe, C. L., & Taylor, A. S. (2006). Mentoring programs: A framework to inform program development, research, and evaluation. *Journal of Community Psychology, 34*, 709-725. doi: 10.1002/jcop.20125
- King, K. A., Vidourek, R. A., Davis, B., & McClellan, W. (2002). Increasing self-esteem and school connectedness through a multidimensional mentoring program. *Journal of School Health, 72*, 294-299. doi: 10.1111/j.1746-1561.2002.tb01336.x
- Krysik, J., & LeCroy, C. W. (2002). The empirical validation of an instrument to predict risk of recidivism among juvenile offenders. *Research on Social Work Practice, 12*, 71-81. doi:10.1177/104973150201200106
- Larose, S., Tarabulsy, G., & Cyrenne, D. (2005). Perceived autonomy and relatedness as moderating the impact of teacher-student mentoring relationships on student academic adjustment. *The Journal of Primary Prevention, 26*, 111-128. doi: 10.1007/s10935-005-1833-3
- Larson, R. (2006). Positive youth development, willful adolescents, and mentoring. *Journal of Community Psychology, 34*, 677-689. doi: 10.1002/jcop.20123
- Leventhal, T., & Brooks-Gunn, J. (2011). Changes in neighborhood poverty from 1990 to 2000 and youth's problem behaviors. *Developmental Psychology, 47*, 1680-1698. doi: 10.1037/a0025314
- Li, Y., & Lerner, R. M. (2011). Trajectories of school engagement during adolescence: Implications for grades, depression, delinquency, and substance use. *Developmental Psychology, 47*, 233-247. doi: 10.1037/a0021307
- Loeber, R., Farrington, D. P., Stouthamer-Loeber, M., & Van Kammen, W. B. (1998). *Antisocial behavior and mental health problems: Explanatory factors in childhood and adolescence*. Mahwah, NJ: Lawrence Erlbaum.
- LoSciuto, L., Rajala, A. K., Townsend, T. N., & Taylor, A. S. (1996). An outcome evaluation of Across Ages: An intergenerational mentoring approach to drug prevention. *Journal of Adolescent Research, 11*, 116-129. doi: 10.1177/0743554896111007
- Markus, H., & Nurius, P. (1986). Possible selves. *American Psychologist, 41*, 954-969. doi:10.1037/0003-066x.41.9.954
- Mason, W. A., Hitchings, J. E., McMahon, R. J., & Spoth, R. L. (2007). A test of three alternative hypotheses regarding the effects of early delinquency on adolescent psychosocial functioning and substance involvement. *Journal of Abnormal Child Psychology, 35*, 831-843.
- Masten, A. S., & Reed, M. (2002). Resilience in development. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology*. (pp. 74-88). New York: Oxford University.
- McBee, M. (2010) Modeling outcomes with floor or ceiling effects: An introduction to the Tobit Model. *Gifted Child Quarterly, 54*, 314-320. doi: 10.1177/0016986210379095

- Mead, G. H. (1934). *Mind, self, and society from the standpoint of a social behaviorist*. Chicago, IL: University of Chicago.
- Palermo, G. B. (2009). Delinquency: Risks and protective factors. *International Journal of Offender Therapy and Comparative Criminology*, 53, 247-248. doi:10.1177/0306624x09335886
- Parra, G. R., DuBois, D. L., Neville, H. A., Pugh-Lilly, A. O., & Pavinelli, N. (2002). Mentoring relationships for youth: Investigation of a process-oriented model. *Journal of Community Psychology*, 30, 367-388. doi: 10.1002/jcop.10016
- Putnins, A. L. (2010). An exploratory study of young offenders' self-reported reasons for offending. *Journal of Forensic Psychiatry & Psychology*, 21, 950-965. doi:10.1080/14789949.2010.491552
- Rhodes, J. (2002). *Stand by me: The risks and rewards of mentoring today's youth*. Cambridge, MA: Harvard University Press.
- Rhodes, J. (2005). A Model of Youth Mentoring. In D. L. DuBois & M. J. Karcher (Eds.), *Handbook of youth mentoring*. (pp. 30-43). Thousand Oaks, CA: Sage Publications.
- Rhodes, J., Reddy, R., Roffman, J., & Grossman, J. (2005). Promoting successful youth mentoring relationships: A preliminary screening questionnaire. *The Journal of Primary Prevention*, 26, 147-167. doi: 10.1007/s10935-005-1849-8
- Rhodes, J., Spencer, R., Keller, T. E., Liang, B., & Noam, G. (2006). A model for the influence of mentoring relationships on youth development. *Journal of Community Psychology*, 34, 691-707. doi: 10.1002/jcop.20124
- Rhodes, J. E. (2008). Improving youth mentoring interventions through research-based practice. *American Journal of Community Psychology*, 41, 35-42. doi: 10.1007/s10464-007-91539
- Rhodes, J. E., & DuBois, D. L. (2008). Mentoring relationships and programs for youth. *Current Directions in Psychological Science*, 17, 254-258. doi: 10.1111/j.1467-721.2008.00585.x
- Rhodes, J. E., Reddy, R., & Grossman, J. B. (2005). The protective influence of mentoring on adolescents' substance use: Direct and indirect pathways. *Applied Developmental Science*, 9, 31-47. doi: 10.1207/s1532480xads0901_4
- Rhodes, J. E., & Spencer, R. (2010). Structuring mentoring relationships for competence, character, and purpose. *New Directions for Youth Development*, 126, 149-152. doi:10.1002/yd.356
- Schumacker, R. E., & Lomax, R. G. (2010). *A beginner's guide to structural equation modeling (3rd ed.)*. New York, NY: Routledge/Taylor & Francis Group.
- Sipe, C. L. (2002). Mentoring programs for adolescents: A research summary. *Journal of Adolescent Health*, 31, 251-260. doi:10.1016/S1054-139X(02)00498-6

- Spencer, R. (2006). Understanding the mentoring process between adolescents and adults. *Youth & Society*, 37, 287-315. doi: 10.1177/0743558405278263
- Spencer, R. (2007). 'I just feel safe with him': Emotional closeness in male youth mentoring relationships. *Psychology of Men & Masculinity*, 8, 185-198. doi: 10.1037/1524-9220.8.3.185
- Taylor, A. S., LoSciuto, L., & Porcellini, L. (2005). Intergenerational mentoring. In D. L. DuBois & M. J. Karcher (Eds.), *Handbook of youth mentoring*. (pp. 286-299). Thousand Oaks, CA: Sage Publications.
- Thompson, L. A. & Kelly-Vance, L. (2001). The impact of mentoring on academic achievement of at-risk youth. *Children and Youth Services Review*, 23, 227-242. doi: S0190-7409(01)00134-7
- Tierney, J. P., & Baldwin-Grossman, J. (1995). *Making A Difference: An Impact Study of Big Brothers/Big Sisters*. Philadelphia, PA: Public/Private Ventures.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University.
- Weinberg, N. Z. (2001). Risk factors for adolescent substance abuse. *Journal of Learning Disabilities*, 34, 343-351. doi:10.1177/002221940103400409
- Zand, D. H., Thomson, N., Cervantes, R., Espiritu, R., Klagholz, D., LaBlanc, L., et al. (2009). The mentor-youth alliance: The role of mentoring relationships in promoting youth competence. *Journal of Adolescence*, 32, 1-17. doi: 10.1016/j.adolescence.2007.12.006